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ABSTRACT

The committee responsible for the present report was asked to perform a variety of functions that fall into 5 categories: (1) the identification and articulation of long-range goals for graduate education at Stanford; (2) the implementation of a pilot project using Departmental Visitation Teams to study graduate curricula in several departments; (3) the appointment, coordination, and support of topic committee activities; (4) the supervision of staff data collection efforts; and (5) the formulation and dissemination of recommendations, monitoring the progress of these recommendations and, when appropriate and desirable, sharing with other universities in insights and conclusions of the study. This document reviews the efforts of the committee and includes chapters on the 4-year Ph.D., the assessment and reporting of students' performance and prospects, the Ph.D. dissertation and alternative degrees, student financial aid, and graduate student teaching. (HS)

ED 063854

The Study of Graduate Education at Stanford

STANFORD UNIVERSITY JUNE 1972

HE 003 072

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The Study of Graduate Education at Stanford

Report to the Senate of the Academic Council

STANFORD UNIVERSITY JUNE 1972

Letter of Transmittal

To the Steering Committee,
Senate of the Academic Council

Gentlemen:

I write on behalf of the Study of Graduate Education to inform you that in accordance with our charge, we have made our recommendations and concluded our work. I had hoped also to tell you that I enclosed copies of our recommendations, but unfortunately they are in the hands of the Stanford Press and they tell me that they may not let go of them for six to eight weeks. At that time, I shall have them promptly forwarded to you.

The charge to the Study calls for us to "implement a project to study graduate programs in the departments, using departmental visitation teams." We have completed three such visits, and their results are discussed in general terms in the text of our report. Since it seemed to us that the reports were designed primarily for internal consumption in the departments, we have not included the texts of the reports in our final report. Nonetheless, it seems to us important for the Senate to have those reports in order to make an informed decision on the value of continuing such visits. Accordingly, we plan to distribute them to the Senate with the final version of our report.

Numerous people made contributions to our recommendations and were involved with our work. Professor Moses Abramovitz was a member of the Study until the conflicting pressures of his appointment as Chairman of his department made it impossible for him to continue. His name does appropriately appear on the report of the Topic Committee on The Dissertation and Alternative Degrees, and his ideas have manifested themselves elsewhere in the report. Our charge called for the Chairman of the Committee on Graduate Studies to be an ex officio member. Since the incumbent of that role changed in the middle of our study, neither Professor David Levin nor Professor Donald Davie appears as a signatory, as both were unable to participate in the full course of our deliberations. We are indebted to department Chairmen, administrators, and others far too numerous to list who contributed information. And I would be remiss in not offering thanks to Rosanne Simon, Nancy John, and Janet Perez for innumerable contributions of all forms, and to Muriel Bell for taking over the editorial work as I depart.

Finally, I am indebted to the Committee on Committees for providing a group remarkable in their dedication to the improvement of graduate education, and unequaled in their ability to set aside personal feelings in their work toward a common goal. It has been a rare privilege for me to work with them.

Respectfully submitted,
J. Merrill Carlsmith, for SGES

March 20, 1972

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The Study of Graduate Education at Stanford

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CHAPTER I

Introduction

The Study of Graduate Education at Stanford was authorized by the Senate of the Academic Council on January 28, 1971. Faculty and staff members were appointed by the Committee on Committees on February 9; student members were appointed on March 2. Since that time we have met weekly except during the summer, when we held less frequent but longer meetings.

Our charge asks us to "identify and articulate long-range goals of graduate education (particularly that toward the Ph.D. degree) in this University." (The entire charge is reprinted below as Appendix I-1.) The charge also authorizes us to create six topic committees. In fact we have created five, and their reports appear as Chapters V–IX of this report. The appearance of the committees' reports as chapters in this longer report reflects our essential agreement with their recommendations. There has been close and continuous interaction between the various topic committees and the parent committee. The heavily overlapping membership and the fact that the chairman of every topic committee was a member of the Study has undoubtedly contributed to the convergence of viewpoints. We do not mean to imply that every member of the Study agrees with every detail of the recommendations, but the continuous interchange of ideas and information between the Study and its various topic committees has resulted in a general consensus. From our discussions of all the issues facing the topic committees—and this is perhaps the major contribution of the Study—there gradually evolved a general image of what we felt graduate education should become. We believe that the changes recommended by our topic committees will help make that image a reality.

We have gained instruction from a wide variety of sources. In addition to the reports of our five topic committees, we have commissioned reports on several areas which seemed important to us but about which we had little expertise. The results of those reports are discussed in Chapter X. In addition, departmental visitation teams (described in Chapter XI) have provided us with a deeper understanding of how graduate education actually functions in at least three departments. In addition to sending lengthy questionnaires to all departments, we met informally with the Chairmen and Directors of Graduate Studies of at least a dozen departments to discuss the potential impact of some of our ideas on those departments. Similar interviews were carried out with a number of graduate students. Faculty members have written us thoughtful suggestions that have influenced these recommendations. A number of Stanford Ph.D.'s have responded to questionnaires and in many cases sent us additional letters.* We are indebted to all these informants, as well as the much larger number of people who made less formal contributions.

A few remarks should be made about the focus of these recommendations. From the beginning, the Study has been concerned most directly with the Ph.D. programs in Humanities and Sciences, to a lesser extent with Ph.D. programs in Engineering and with Ph.D. programs elsewhere in the University. The statistics we present, which offer the most detail for Humanities and Sciences, reflect this concern. The two major reasons for our choice of focus are simple. First, it became apparent early in our deliberations that the most serious problems we saw with graduate education at Stanford occurred predominantly in Humanities and Sciences departments. Second, we felt a strong need to restrict our investigation to problems of a manageable size. On reflection (as a variety of theories would predict), we feel this was a wise decision. Earlier students of graduate education at

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* The responses are discussed in Appendix I-2.

Stanford were, we believe, in many cases so bedazzled by the diversity of the fifty-odd Ph.D. programs they simply gave up. Our restricted focus on Humanities and Sciences and Engineering at least enabled us to isolate some common features of all Ph.D. programs in those schools. This is not to deny our firm belief that the recommendations presented below are indeed relevant to all Ph.D. programs in the University. We have in fact tried to carry out checks to make sure that they are, but only debate will resolve that question definitively. One could of course argue that as the other Ph.D. programs have in general grown out of earlier programs in Humanities and Sciences, so should changes in them grow out of changes recommended for their historical parents. In point of fact, our impression has been that the Ph.D. programs in the professional schools already embody many of our recommendations. (Since the School of Education was simultaneously carrying out its own study, we tended to pay less attention to their programs.) If there exist individual programs to which a given recommendation is for some reason inappropriate, our position is of course that that recommendation should not be applied to them. To sound a theme that will recur throughout our report, however, we feel that the burden of proof should be on the nonconforming department to demonstrate that a given recommendation is inappropriate to its program. And we oppose the notion that any recommendation should be shelved because it does not prove equally applicable to every one of the 55 Ph.D. programs currently active at Stanford.

Finally, we respond to the many who will ask why various topics did not receive fuller, or indeed any, attention. Certainly there are numerous relevant questions that go unmentioned in this report. Many of these were, in fact, the subject of extensive discussion and debate throughout the course of the Study. We have decided, however, to include a topic in this final report only when our discussion of it led directly to a recommendation for action.

CHAPTER II

Assumptions and Goals

As we have struggled to articulate long-range goals for graduate education at Stanford, we have looked both at the particular strengths of this University and at the needs of our society. It can be persuasively argued that our society now needs forms of education at the post-baccalaureate level that differ radically from those Stanford now provides, and in fact we have received suggestions for radical change in graduate education at Stanford. Yet as we have examined these arguments and suggestions we have been constantly guided by one overriding question: how can Stanford's graduate programs best respond to the needs of society in the years ahead?

We are convinced that the fundamental strengths of this institution—its faculty, its physical resources, the kinds of students it attracts—suit it ideally to continue to train scholars aiming at the very highest levels of intellectual achievement. By no means do we reject the idea that the University should be exploring new programs and alternative modes of graduate education; a number of potentially fruitful innovations are discussed below. But it is our belief that the major effort of our graduate programs should continue as it is: to educate creative and productive scholars at the forefronts of their disciplines.

Certainly the need for large numbers of Ph.D.'s is diminishing—at least as measured by market demand. Table 1 and Figure 1 show recent projections of the number of Ph.D.'s likely to graduate in the next two decades and the number of jobs avail-

TABLE 1

Need for Ph.D.'s on University and College Faculties

Period	Ph.D.'s awarded, actual and projected	New teachers with Ph.D.'s needed	Column 3 as percentage of column 2
1960–64	59,300	33,900	57%
1965–69	103,600	41,500	40
1970–74	157,600	47,700	30
1975–79	204,100	44,200	22
1980–84	258,000	27,100	11
1985–89	?	–400	0

SOURCE: Dael Wolfle and Charles V. Kidd, "The Future Market for Ph.D.'s," *Science*, 173 (August 27, 1971), 787; based on data supplied by Allan M. Cartter. (Copyright 1971 by the American Association for the Advancement of Science.)

able to them. These figures can hardly fail to be depressing for anyone producing or receiving a Ph.D.[*] Yet though demand may decrease, we believe that there will always be a need for truly outstanding scholars, and that Stanford can and should continue to produce such scholars. Even now, when the shrinking job market is causing grave employment problems and Stanford's Ph.D. output is at an all-time high, most Stanford Ph.D.'s are able to find suitable employment (See Appendix II-1). Recent shifts in the market are of course posing real problems for Stanford Ph.D.'s, but these shifts appear mainly to be reducing the range and quality of opportunities for our students, rather than causing outright unemployment.

Although departments will certainly wish to consider carefully employment opportunities for their students in deciding on the number of new students to admit, we do not believe that Stanford should set a general admissions policy on the basis of national aggregate statistics. It should be noted in this connection that most departments have already substantially cut

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[*] Recent projections of the number of Ph.D.'s likely to be produced in Physics in 1975 and 1980, carried out by Stanford's Dean of Graduate Studies on more recent and detailed data provided by the American Institute of Physics, suggest that the estimates in Table 1 may be high. For example, the National Research Council estimate for 1975 is 2,383; the Office of Education estimate is 2,253; the Cartter estimate is 1,997; but Dean Moses's estimate is 1,480. In 1979–80, Moses projects a value of 1,183, compared with the National Research Council estimate of 3,708, the Office of Education estimate of 2,608, and the Cartter estimate of 2,680.

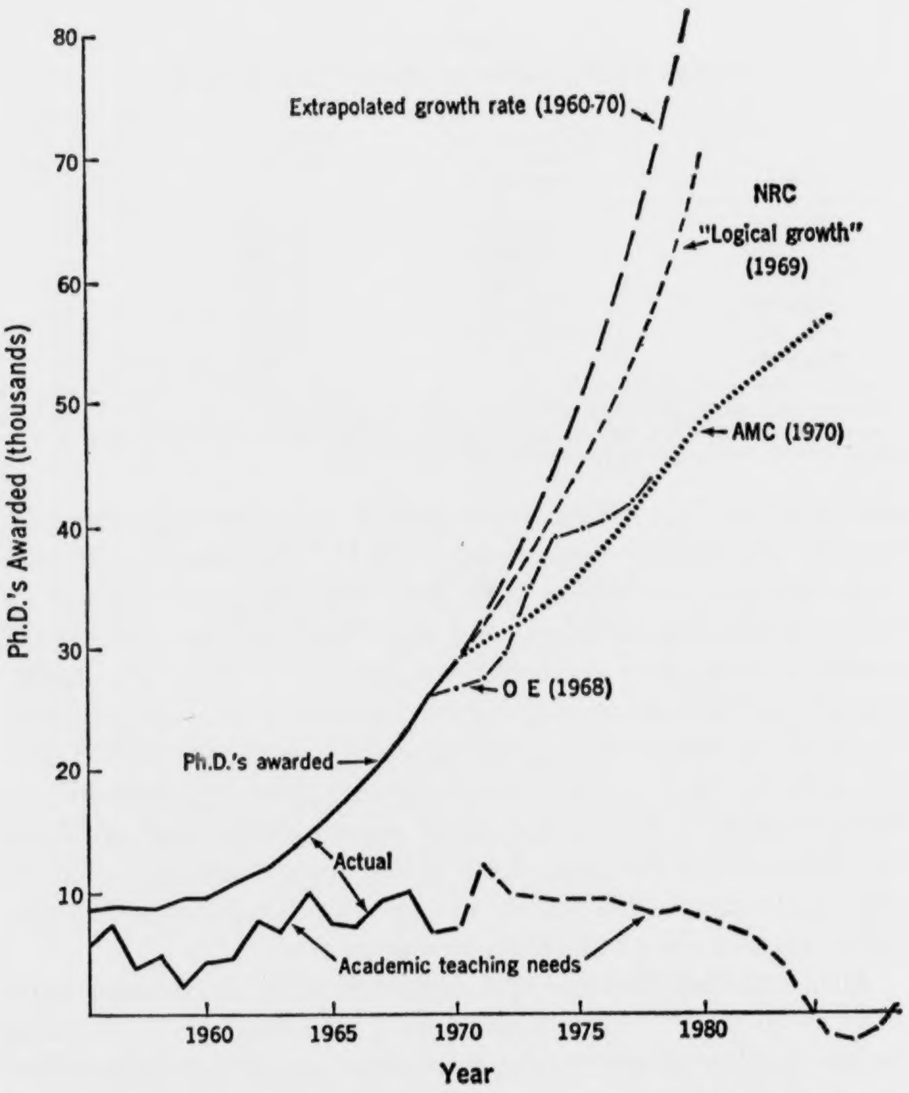

Fig. 1. Actual and projected Ph.D.'s awarded, and the number needed for college and university teaching. Included are National Research Council (NRC), Office of Education (OE), and Allan M. Cartter (AMC) projections. Reproduced from Allan M. Cartter, "Scientific Manpower for 1970–1985," *Science*, 172 (April 9, 1971), 137. (Copyright 1971 by the American Association for the Advancement of Science.)

back on admissions in the last four years. The Humanities and Social Sciences admitted approximately 320 students a year during the peak of the Ford Grant in the late 1960's; they now admit about 200 a year. The Physical Sciences are moving toward similar cuts. This decrease is due partly to reduced financial resources and partly to pessimistic estimates by individual departments about job prospects in their discipline. We note parenthetically that many of these reductions seem to us to have had beneficial side effects. If the enrollment in a given department shrinks to such a level that the department becomes concerned about "critical mass" or the presence of sufficient students to make first-year seminars viable, we suggest that they consider the possibility of admitting students every other year, thus providing classes of viable size for courses that would then be offered in alternate years. Our basic assumption, however, is that Stanford will continue to train approximately the same kinds of Ph.D.'s in approximately the numbers we now admit.

Despite this paean to the status quo, we see a number of new and increasing needs to which the University can and should respond. Many of them will require new programs—at the Ph.D. level, the A.M. level, or something in between. Many such programs already exist. Indeed, as we have examined the current structure of graduate education at Stanford, we have been impressed with the variety of thriving programs that have emerged in recent years. We outline below some structural changes that should make it easier to begin more such programs. In general, we expect these new programs to be markedly interdisciplinary and in many cases oriented toward applied research. We see little to be gained, however, by either exhortatory rhetoric or creation by fiat of new interdisciplinary programs, for we believe that such programs will succeed only when they grow out of a commitment by the faculty who will teach in them and the enthusiasm of the students who will learn from them.

Returning to our present Ph.D. programs, we note with some pride that in the recent ratings of graduate programs by the American Council on Education, the ratings for "effectiveness of graduate program" in every Stanford department was either as high as the ratings for "quality of graduate faculty" or higher.[*] In comparison with other schools, then, and insofar as these rankings are making real distinctions, Stanford is using its resources rather well. Nonetheless, our charge and goal has been to strengthen and make more effective our graduate programs, and despite these ratings we see much to be done. To be better than the average graduate program with comparable faculty is not necessarily a distinction on which to rest.

Two aspects of our current programs concern us deeply: the length of time it currently takes students to receive their Ph.D., and the attrition among the students along the way. Appendix II-2 presents detailed data on the length of time it takes Stanford students to complete their degree. Table 2 and Figure 2 present a few highlights from those data. These figures seem to us to indicate a lamentable situation. One way of defining its lamentability is to point out that almost no one believes them to be true without studying them in detail. Again and again we have been struck by the fact that members of the faculty severely underestimate the length of time it takes their students to finish, and that most students have no idea how long they can expect to be in graduate school when they begin, or even when they are well along. Again and again we have encountered students in the second year of a Ph.D. program who expect to finish in four years even though 90 per cent of the students in that department take longer than six years. Our view is that for a number of correctable reasons (spelled out below in some detail) students are taking too long to finish their degrees.

Such statements inevitably arouse fears that we are proposing to "cheapen" the Ph.D. Whether the charge is appropriate depends on which definition of "cheapening" is being applied here. At only one place in our report do we recommend any reduction in departmental expectations; this one instance occurs in the discussion of the dissertation, and as the report of the Committee on the Dissertation and Alternative Degrees is at pains to point out, the changes recommended involve a modification in

[*] Kenneth D. Roose and Charles J. Andersen, *A Rating of Graduate Programs* (Washington, D.C.: American Council on Education, 1970).

TABLE 2

Years from Graduate Matriculation to Degree by Stanford Ph.D.'s of 1969–71, by School

Category	Humanities[a] (*N* = 237)	Social Sciences (*N* = 183)	Physical Sciences (*N* = 282)	Education[b] (*N* = 163)	Engineering (*N* = 481)	All Ph.D.'s (*N* = 1,346)
Years from matriculation to degree:						
0–2	1.3%	.6%	.4%	1.8%	.2%	.7%
2–3	3.0	4.9	4.6	19.6	4.0	5.9
3–4	11.0	21.8	28.6	22.7	11.2	17.7
4–5	17.7	23.5	34.3	16.6	23.1	23.8
5–6	15.6	18.0	16.7	8.6	29.9	20.4
6–7	11.8	10.9	8.9	6.1	13.9	11.1
7–8	11.8	7.7	3.9	6.1	5.6	6.7
8–9	8.0	4.9	1.1	3.7	5.6	4.8
9–10	7.2	1.1	.7	3.1	1.7	2.5
10–11	4.6	2.2	.4	3.1	1.5	2.1
11–12	8.0	4.4	.4	8.6	3.3	4.3
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Mean years to degree	6.9	5.8	4.8	5.7	5.8	5.8
Median year of completion	6	5	4	4	5	5
Year by which 75% have degree	7	7	5	7	6	6

NOTE: The first cell reads as follows: "Of those who received Ph.D.'s in the Humanities in the three academic years 1968–69, 1969–70, and 1970–71, 1.3% were awarded the degree between 0 and 2 years after matriculation." Computations are based on elapsed quarters from matriculation; thus "2–3" years means either 2¼ or 2½ or 2¾ or 3.

[a] Defined here and elsewhere in this report as consisting of Asian Languages, Classics, Drama, English, French, German Studies, History, Linguistics, Music, Philosophy, Slavic, and Spanish and Portuguese.

[b] Includes Ed.D. as well as Ph.D. recipients.

the *concept* of the dissertation and a reduction in the sheer *quantity* of work required, but no diminution in the *intellectual quality* the dissertation must demonstrate. We have no desire to "cheapen" the degree intellectually. Our investigations have persuaded us that the students who take the longest to complete their degree are not necessarily more serious, more concerned with the fundamentals of scholarship, better educated, or wiser in the end. If anything, our impression is the opposite. If, on the other hand, the "cost" of the Ph.D. is to be reckoned in terms of dollar costs to the University or the number of student-years invested to return each Ph.D., then we emphatically are calling

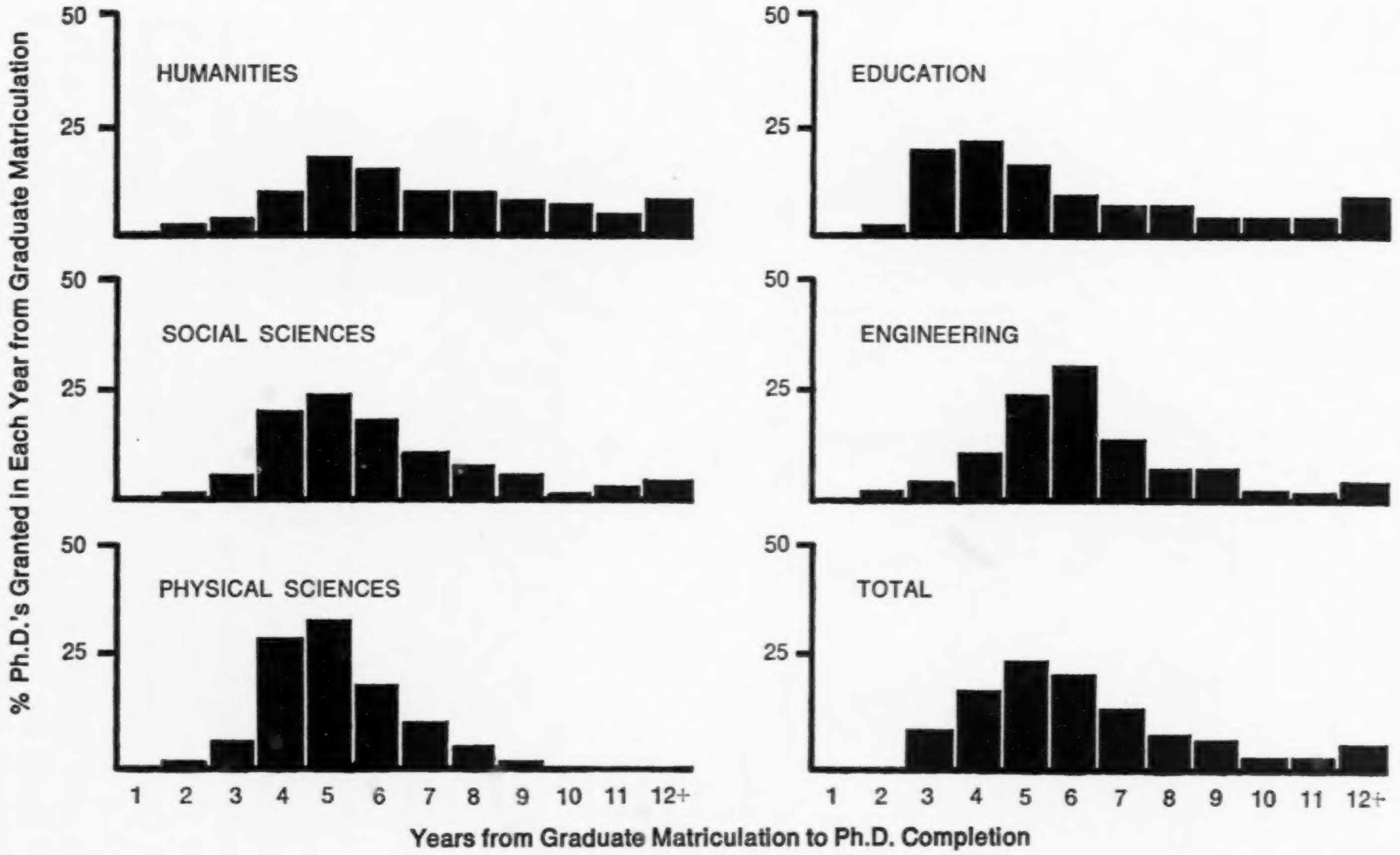

Fig. 2. Years to Ph.D. by School.

for cheapening. A recent study at Berkeley calculates the number of student-years, including the years in residence of students who never receive a degree, required to produce one Ph.D. The various departments at Berkeley range from a low of 5.02 to a high of 18.68.[*] Such figures represent a human and financial cost that seems too great to bear.

The receipt of a Ph.D. does not mark the end of learning. We see no need to assume that a recently graduated young scholar is fully conversant with all aspects of all fields represented in his department. Our view is that the Ph.D. should certify certain kinds of training and a certain level of scholarly accomplishment, but that we should never lose sight of the fact that it is only the beginning of a young man or woman's scholarly career.

A reasonable time to completion of the Ph.D. will become the norm, we believe, only when our departments develop a clearer set of expectations for their graduate students and a fairly precise timetable for the fulfillment of those expectations. The report of the Committee on Assessment and Reporting goes into this issue in great depth in Chapter V. We recognize that some of the most creative intellectual work involved in graduate education does not always lend itself to the kind of rigid timetables we see in our professional schools, where the M.D., J.D., M.B.A., is almost always awarded after four, three, or two years of well-defined progress. Nonetheless we reject the view (which is all too easy to attribute to some departments) that the Ph.D. is a prize awarded to the rare student who, after an indeterminate period of graduate study (perhaps exceeding ten years) manages to produce a major, original contribution to knowledge.

Our second major concern with our current programs is the amount of attrition that occurs during the many years toward the Ph.D. There are many reasons for the attrition rates shown in Tables 3 and 4,[†] and some have even argued that a high attrition rate is to be applauded, not deplored. Given the apparent impossibility of refining our selection process to the point of ad-

[*] David W. Breneman, "An Economic Theory of Ph.D. Production" (Berkeley: Office of the Vice President—Planning and Analysis, University of California, 1970).

[†] More detailed data are presented in Appendix II-2.

TABLE 3

Per Cent of Graduate Student Re-enrollment in Humanities and Sciences

School	First-year students re-enrolling in:					
	2d year		3d year		4th year	
	Pct.	*N*	Pct.	*N*	Pct.	*N*
Humanities	82%	636	66%	537	46%	373
Social Sciences	80	450	71	378	59	256
Physical Sciences	80	642	66	503	56	322
TOTAL for Humanities and Sciences	81%	1,728	67%	1,418	54%	951

SOURCE: Graduate Awards Office for Humanities and Social Sciences; departmental records for Physical Sciences. (See caveat, Appendix II-2, Table 2.)

NOTE: Consultation with departments having terminal Master's programs made it possible to purge from the initial cohort of first-year students all those not enrolled in Ph.D. programs. Second-year re-enrollment figures are based on students matriculating in the four years 1967–70; third-year figures on students matriculating in 1967–69; fourth-year figures on students matriculating in 1967 and 1968.

mitting only applicants who will in fact do well in graduate school, a high attrition rate, especially in the first year of graduate study, may indicate commendable efforts by a department to cut its own losses and also avoid prolonging the agony of students lacking the ability or motivation to complete the Ph.D.* But as the data indicate, attrition does not always occur early in the program. We are especially unhappy about the students who complete two, three, or even four years of graduate school only to drop out further along the way. We quote the Committee on Assessment and Reporting:

> Despite having made extensive use of faculty and University resources and having spent what often is the most creative period of life in graduate school, some of these students will never receive a degree, to their understandable embitterment. The waste of resources we speak of is not some cold notion derived from cost-benefit analy-

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* As an alternative, we point to one of our most distinguished Ph.D. programs, in the Medical School. Fifty students have been admitted to this program in the past seven years. Pressure from the draft has forced three of these fifty students to drop out and enroll in M.D. programs, but they are continuing their research in the same laboratories as before. One student entered the Peace Corps, also because of draft pressures, but is now finishing his dissertation. The other forty-six have received their Ph.D. or are proceeding on schedule toward the degree. To be sure, the department in question uses rigorous admission procedures, including interviews of all prospective students.

TABLE 4

Years from Conferral of Candidacy (Green Sheet) to Degree by Stanford Ph.D.'s of 1970 and Earlier, by School

	Year Green Sheet was filed										
School or Program	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960 & earlier	Average no. of years to Green Sheet[a]
Humanities[b]											3.29
No. filing Green Sheet	110	99	132	106	108	86	77	64	38	239	
Pct. w/degree by 1970	1%	11%	22%	56%	64%	63%	78%	78%	89%	84%	
Social Sciences											2.95
No. filing Green Sheet	65	71	66	63	61	59	54	44	22	173	
Pct. w/degree by 1970	9%	37%	71%	76%	72%	80%	81%	82%	100%	89%	
Physical Sciences											3.26
No. filing Green Sheet	130	115	103	102	74	77	65	72	46	294	
Pct. w/degree by 1970	15%	52%	82%	96%	96%	94%	95%	97%	89%	95%	
Education[c]											3.29
No. filing Green Sheet	71	60	47	45	29	27	16	11	16	80	
Pct. w/degree by 1970	1%	27%	55%	73%	76%	78%	94%	100%	94%	84%	
Engineering											2.82
No. filing Green Sheet	197	207	174	170	136	137	114	114	93	320	
Pct. w/degree by 1970	7%	47%	71%	83%	88%	96%	91%	94%	98%	93%	
Earth Sciences											2.42
No. filing Green Sheet	31	33	19	21	24	25	21	12	24	89	
Pct. w/degree by 1970	6%	27%	58%	71%	71%	84%	81%	83%	92%	93%	
Medicine											
No. filing Green Sheet	23	25	20	20	19	17	15	14	10	46	
Pct. w/degree by 1970	0%	48%	80%	60%	79%	88%	93%	93%	90%	80%	
Business											
No. filing Green Sheet	22	14	6	24	14	9	10	14	3	34	
Pct. w/degree by 1970	18%	21%	83%	92%	93%	89%	90%	93%	100%	94%	
Graduate Special											
No. filing Green Sheet	4	6	6	7	6	10	6	2	2	22	
Pct. w/degree by 1970	0%	50%	100%	43%	67%	80%	100%	100%	50%	73%	

NOTE: The first cell reads as follows: "Of the 110 students in the Humanities who filed a Green Sheet in 1969, 1% received the Ph.D. by the end of 1970."

[a] Figures were unavailable for the Schools of Medicine and Business and the Graduate Special program.

[b] See Table 2, note *a*.

[c] Includes Ed.D. recipients.

sis; the term describes a real loss of years, of careers; it alludes to some dreams shattered, and to other dreams never realized because the places in graduate school were all taken.

Our third major concern has been Stanford's commitment to the education of minority students. The fall of 1969 witnessed the University's first systematic attempts to recruit Black, Chicano, and Native American students. The recruitment program resulted from a generally heightened awareness, particularly on university campuses, of the effect of racism in all our social institutions. The spotlight has been on the universities' response to the needs of minority communities because education is so crucial to improved status in American society. Increases in minority enrollment at Stanford, as shown in Appendix II-3, have been modest but steady.

Stanford's experience has been too brief for any far-reaching assessment of the recruitment and support program. However, our minority students have strong convictions about the direction of the University in several areas that affect them most directly.

The University must be aware that the Ph.D.-overproduction thesis, however valid for the rest of the population, does not apply to minority students. Less than 1 per cent of the nation's Ph.D.'s are from the Black, Chicano, and Native American population. There are only a hundred Chicano Ph.D.'s in the United States, for example. Among the most urgent demands being made today by institutions of higher learning is the demand for qualified faculty from minority groups. To meet that demand, universities like Stanford must continue to increase both the number of minority members appointed to their faculties and the number of minority students admitted to their graduate programs.

Just as minority students at Stanford have more varied educational backgrounds than their Anglo counterparts, so it is likely that their professional careers will be centered at institutions quite unlike Stanford—whether a small Black college or a non-research-oriented urban university—and the faculty may have to take the minority student's professional goals into account in different ways than they have traditionally. A minority student in one of the Social Sciences who intends to work directly with the people of a particular community or at a small Black college that has no computer facilities may find that traditional departmental requirements or offerings do not adequately contribute to professional goals.

As a major, white, well-financed university, Stanford poses problems for any student coming from a dissimilar institution. Some minority students must make an unusually strenuous series of adjustments to the Stanford environment, and may in turn require an unusually sensitive evaluation and assessment by faculty. In some instances apparent academic deficiencies may be symptoms of other kinds of adjustment problems.

We would encourage the development of specialized courses dealing with minority issues in almost every School and department within the University. Many minority students have taken the initiative in organizing seminars and graduate courses dealing with issues that face their communities; such initiative should receive departmental support and encouragement. Course work at the University is sometimes solely theoretical. In the Social Sciences, where the actual application of data is often as meaningful as the development of theory, we see many opportunities for faculty to collaborate with interested students in developing applied research seminars and programs directed toward some of the problems that concern the students most. The recommendations of the Committee on Alternative Programs are especially relevant to these issues.

One example of a research program that could foster applied research comes from the African and Afro-American Studies program. The proposal (currently in the planning stages) calls for the establishment of a Black Studies Institute, which will have a graduate teaching and degree-granting component whose research orientation emphasizes issues facing Black people.

Although we recognize that each department must define its own contribution to the University's pledged responsiveness to minority needs, we cannot overemphasize the need for qualified minority professionals in most fields offered for doctoral study at Stanford, a need expressible in terms both of market demand and of benefits to society.

CHAPTER III

Autonomy, Accountability, and the Department

> "Departmental Faculties may be instructed in their duties by the Council, and may be called upon to report their action to it."
>
> Articles of Organization of the Faculty,
> Chapter 4, Section 2-G

It is a truism that education for the Ph.D. is a highly idiosyncratic experience. Any attempt to prescribe structural improvements in what is essentially a unique interpersonal relationship between a graduate student and one or two faculty members is bound to be frustrating. Again and again in our study, we have been struck by the extraordinary diversity of our Ph.D. programs. It often seems that graduate work in theoretical physics bears so little resemblance to graduate work in French as to make any recommendation that would apply to them both impossible even to conceive. Even within one department the differences between subfields may be large and in the last analysis it is the relationship between the individual student and his adviser that we are talking about. Much of the hoped-for improvement in the quality of our Ph.D. programs will have to come from changes in the nature of that relationship.

Nevertheless, we are here because we believe that there are a number of meaningful commonalities throughout the Graduate Division. Diversity should not become the alibi for an abdication of the general responsibility of the faculty. Faculty members have a corporate responsibility, at both the departmental and the University level. It is the faculty of the University that awards the Ph.D., and it is the responsibility of the faculty to uphold the standards for that degree. We believe that it is also the responsibility of the faculty as a corporate body to establish guidelines and procedures for Ph.D. programs which will guarantee that neither the resources of the student nor those of the University are being squandered. A decent respect for diversity does not inevitably imply a license to be arbitrary.

There are certain functions so central to the purposes of a university that its reputation depends primarily on how well those functions are performed. They include the planning and presentation of curriculum, the admission of students (and award of financial aid), the advice, supervision, and guidance of students, the assessment and certification of student work and student progress, and the building and renewal of departmental faculty.

American higher education is built on what might be called the departmental model, which puts these functions primarily under the collective consultative control of individual departments. This is not the only model; the one-professor institute is very different. There is much to be said for the departmental model. First, decision-making and initiative reside where the expertise is. Second, there are always administrative advantages to decentralized decision-making. Third, and much the most important, the departmental model mobilizes departmental responsibility. A department develops a reputation over time that reflects the quality of its decisions on the key functions we have just enumerated; knowledge of that fact stimulates responsibility in the good department.

The notable success of American higher education is a testimonial to the success of the departmental model. A university's excellence in graduate study both signifies and reflects the excellence of its individual departments.

Departmental autonomy promotes the effective execution of departmental responsibilities. At the same time, we must concede that autonomy makes the failure of a department hard to correct, or in many cases even to recognize for a long period of time. One mode of failure is for decisions properly of a corporate character to be made anarchically, and then tacitly rubber-stamped as if they were department-sanctioned in some real way. Where this pattern governs such functions as faculty selection, or admission or support of students, or certification of the quality of their work, the innate strength of the departmental system is subverted and departmental autonomy becomes a cover for unreviewable individual decision-making. Such a state of affairs engenders inconsistencies at best, and neglect or even abuse at worst.

So, though departmental autonomy deserves the loyalty of the professoriate, it derives its worth not from first principles, but from its service to departmental responsibility. In graduate education as in the hiring of faculty, the entire university faculty has a direct interest in being sure that autonomy is coupled with responsibility.

Our approach has been to isolate those recommendations which we believe can and should apply across all departments (for example, regulations for the university oral examination, and our recommendation that candidacy be explicitly granted or denied after a two-year period), and to recommend these as general legislation for all departments within the University. These regulations inevitably impinge on departmental autonomy, and we have tried conscientiously to impinge only where we were persuaded we had to. Even in these cases we recognize that there may occasionally be a need for exceptions, either for individual students or faculty members or for departments, but we expect the burden of proof to be on the nonconforming person or department to demonstrate why an exception should be made. Accordingly, all the general recommendations that appear in subsequent chapters have provisos, either explicit there or implied here, to the effect that any department, individual faculty member, or graduate student who believes a particular regulation should be waived may apply to the Committee on Graduate Studies for an exception.

Second, when we think the details will vary too much from department to department, we make a general recommendation and ask each department to spell out clearly the form its application of the recommendation will take. An example of this occurs in Chapter VI, where we outline the general form we think the dissertation should take and ask departments to send detailed specifications to the Committee on Graduate Studies. In the long run we believe that public accountability will do more to improve the quality of graduate programs than any general rules we might formulate.

CHAPTER IV

The Four-Year Ph.D.

The assumption underlying almost all the recommendations in our report is that each department should make its Ph.D. program one that under normal circumstances will be completed in four years. This is not to say that all our recommendations should be rejected if one rejects the argument for a four-year Ph.D., but that they achieve maximum coherence and strength within the framework of a four-year degree.

There is nothing magical about the number four. We have chosen it because it seems to be the consensus of most departments that four years is the minimum time required for the average student to complete the Ph.D. If we look at comparable graduate schools that have some such expectation—at least as reflected in their financial aid policies—we find that Princeton seems to assume a three-year norm, Yale a four-year norm, and Harvard a five-year norm. Evidence suggests that these schools are not much different from Stanford in their failure to realize such a norm in fact.

Nonetheless, for reasons we shall go into shortly, we think that a four-year norm makes sense, and that exceptions to it should be rare. There will have to be some. A student who faces severe language problems (for example, a student embarking on a Ph.D. in Asian Languages who has had at most a year or two of Chinese or Japanese) may have to take longer; so might a student who, say, begins graduate study in Physics never having taken a course in calculus. As our examples suggest, we have severe doubts about the wisdom of admitting students who are clearly unprepared to do graduate-level work in their field—a point discussed at greater length below. Another class of possible exceptions are students in a discipline that requires extensive fieldwork. A student in Anthropology, for example, who spends two years in the field collecting data for his dissertation might reasonably be expected to take a little longer than four years.

We view such cases as exceptions to the general rule that we present as our first recommendation. It should be noted that this recommendation is directly related to recommendations presented in the reports of two of our topic committees. The Committee on Assessment and Reporting recommends (in Chapter V) the presentation of a clear timetable just as we do here, but is silent on its duration. The Committee on the Ph.D. Dissertation recommends (in Chapter VI) a dissertation sufficiently restricted in scope to be compatible with a four-year doctoral program.

1. ***Every department shall present to the Committee on Graduate Studies a clear timetable for the expected progress of its students, showing how the normal student will progress to the Ph.D. in a total of four years. Timetables requiring more than four years shall be subject to the approval of the Committee.***

The first question raised by such a recommendation is, of course, why such rigidity? There are several answers to that question.

In the first place, the scheme we propose is not really all that rigid. If, for compelling reasons we have not foreseen, an entire department believes it must give its graduate students more time to complete the degree, it can make those reasons known to the Committee on Graduate Studies. We assume that there will also be deviations from the timetable on the part of individual students. The student who is especially well-prepared, especially talented, or especially lucky in his research may well complete the program in less than four years.

Second, we agree with the Committee on Assessment and Reporting on the need to monitor a student's progress throughout his graduate career. A clear timetable will facilitate all the other improvements they recommend toward that end.

Third, we think the lack of a clear timetable is a major contributor to high attrition rates and inordinately prolonged graduate careers. We referred earlier to the contrast between our Ph.D. programs and some of our professional schools. The attrition rates among the latter are extremely low in comparison with our Ph.D. programs, and we think one reason for this difference is the clarity with which progress in the professional schools is defined. Perhaps the clearest evidence that we have failed to achieve such clarity in our Ph.D. programs is that neither the faculty nor the students can accurately estimate how long it takes most students in their field to finish.

Departments that have already moved to establish a four-year norm find there is one great problem area—the dissertation. Many students complete all other requirements for the Ph.D. in the first three years, but fail to complete their dissertation in the fourth year. We do not wish to repeat here the analysis of this phenomenon presented in Chapter VI. But there is one extremely important theme sounded there, and also in the reports of the Committee on Assessment and Reporting and the Committee on Teaching (Chapter VII), that we do wish to take up here.

A good many of the graduate programs we have looked at suffer from an extreme compartmentalization of the graduate experience. In the first two years, the student takes courses. In the third year, he teaches. In the fourth year, he begins working on a dissertation. We are strongly persuaded that graduate education should be an integrated experience. We were distressed by conversations with third- and even fourth-year students who had no idea what a dissertation in their field was like. One girl we talked to, who was in the middle of her third year, said she felt at odds because she had nothing to do—she had finished all her course work and exams. When we asked why she wasn't working on her dissertation, she replied, "But that's for the fourth year!"

The Committee on Assessment and Reporting recommends below that a firm decision on whether or not the student is qualified to complete the Ph.D. be made by the end of the second year of graduate study. When discussing that recommendation with others, we have not infrequently been met with the response that although one can judge a student's course work by then, his research potential is still unknown. Although this may be a factually accurate statement about some of our current programs, we believe that it should cease to be one. We consider it important to begin the student on research at an early stage in his graduate career and allow him to develop along an increasingly independent path. This would make it possible to assess his research ability by the end of his second year. More important, it would enable him to begin his dissertation at an earlier stage, or at least to become thoroughly familiar with the meaning of doing research in his discipline. An early introduction to research can be managed in various ways; the exact form depends on the department. Probably few departments will emulate Chemistry, which seems to expect its students to begin their dissertation research in their first year, preferably in the fall but in no case later than February. In theoretical physics, many second-year students are assigned a practice problem that functions as a "mini-thesis" and acquaints the student with the nature of research in a particular area. Whatever form the student's early research experience may take, the department should have a well-thought-out program that starts the student on supervised research early and keeps him involved in progressively more independent research throughout his graduate career, always with a view to the possibility that any particular project may evolve into a dissertation.

A similar theme dominates the recommendations of the Committee on Teaching. We believe the same principle should hold for teaching as for research: the student should have a steadily growing involvement in teaching, with increasing independence and responsibility, culminating in a completely independent teaching experience. Again we were distressed by extreme examples in the opposite direction. One graduate student told us of being handed a textbook at 6:00 P.M. and directed to report to a particular classroom at 8:00 A.M. the next day, where she was to teach a section of an introductory language course with thirty students. She had had no previous teaching experience.

Nor, at the time of the interview (five months later), had she yet discussed her teaching experience with a faculty member. We believe that a department is as responsible for the training of its students as teachers as it is for their training as researchers. In accord with the apprentice model we so admire in research, the graduate student teacher should begin with supervised, structured teaching, gradually take a more salient role, perhaps in a course his adviser is teaching, and finally give a course either by himself or jointly with another similarly prepared graduate student.

Returning to our first recommendation, that departments present a clear timetable for a four-year degree, we see yet another virtue: it leads one to rethink the issue of the poorly prepared student. We do not expect the School of Medicine to allow some students six years to complete the M.D. because they have to spend the first two years learning biology and chemistry. Nor, closer to home, does Chemistry allow some students to postpone serious research until the fourth year of graduate school because they have to spend substantial portions of the first three years learning elementary physics and calculus. How rigorously a department can insist on the skills necessary for graduate study in a given field obviously depends in part on the number of potential applicants that have such skills. Applicants in Southeast Asian History, for example, could not be required to present fluent Lao, Cambodian, and Vietnamese. Nevertheless, the current pressure of applicants on available places and funds makes it both possible and prudent to establish more rigorous admission standards than we have had in the past. We therefore recommend:

> 2. *Each department should restudy its requirements for admissions. In general, time in graduate school should not be devoted to remedial work at an undergraduate level. Thus all or most basic work in languages (both foreign and computer) and mathematics should be completed before matriculation in graduate school.*

If present admissions policies are too loose in some respects, we believe they may be too tight in others. Several of our committees urge departments to explore the possibility of more flexible admissions schemes, under which the student can be offered delayed admission, to allow time for a year's work, childbearing, or other justified interruptions in schooling. Under a similar scheme students with specific deficiencies in their preparation for graduate study could be given time to repair them. We thus recommend:

> 3. *Each department shall consider offering delayed admission to students who have valid reasons for postponing graduate work, and conditional admission for otherwise well-qualified students with a specific deficiency in preparation.*

In many cases such a deficiency might be repaired in the summer before entrance, by an intensive language course, for example.

Some departments currently have upper limits on the age of applicants. We oppose arbitrary restrictions on admission, and do not believe that age should be used simply as a crude index of other variables. The increasing numbers of highly motivated students who wish to enter graduate school after discharging their familial responsibilities deserve to have their applications considered on their merits. While some departments may wish to discourage applications in fields that have undergone enormous changes since the applicants completed their undergraduate education, an across-the-board age limit seems an inappropriate way to achieve this purpose. In the case of a student whose credentials are questionable either because he comes from a foreign university whose standards are unknown or because his undergraduate education dates back considerably, admission to the University Division may offer a way for him to continue in school while demonstrating his ability to do graduate-level work.[*]

We recommend flexibility at the other end of the age and experience spectrum as well. Occasionally, especially able students wish to begin graduate work before they complete their A.B. Or a department may wish to develop a program like that of Electrical Engineering, in which students who have demonstrated high technical skills in electronics, but who lack an A.B., are admitted directly to a Master's program. Students without an A.B. who are adjudged capable of graduate work can be admitted to the University Division, and either be graduated with an A.M. or transferred to a regular Ph.D. program. The possibilities such flexibility would open up for decreasing the time between the freshman year in college and the receipt of an advanced degree merit more attention than they have thus far been given.

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[*] Qualified students who do not have a Bachelor's degree but who wish to work toward an A.M. or M.S. may apply to the University Division. Procedures are explained in the *Information Bulletin.*

The clear and specific timetable we recommend may encourage a kind of self-discipline that is sometimes lacking in both students and faculty. In many cases it is more pleasant (from a rather shortsighted point of view) for all concerned if the student does *not* finish his degree. A faculty member may selfishly prefer to keep his good student around for an extra year or two or three or four; he is presumably more helpful as a research or teaching assistant than a new student who would have to be trained from the beginning. The following quotation from the recent University of California study mentioned earlier describes the extremes this phenomenon can reach:

> From the perspective of the . . . faculty, then, the graduate student must be viewed as a very valuable member of the department's economy. Not only does the graduate student teach the dull introductory courses, but he is a source of student credit hours and demand for advanced instruction. Departmental technology is such that having graduate students in residence for several years is costless to the faculty and not without certain advantages. First, the experienced teaching assistant requires minimal supervision; if graduate turnover were high, faculty would be forced to spend more time working with the fledgling teachers. In addition, second- and third-year graduates can be expected to enroll in more advanced courses, thereby allowing increased faculty specialization. Consequently, in this type of department faculty members have no incentives to make rapid decisions to terminate Ph.D. aspirants. Graduate students are particularly valuable assets to such departments, and will be kept in residence as long as possible. Eventually, fatigue, financial pressures, or the dissertation will produce the necessary attrition.*

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* David W. Breneman, "An Economic Theory of Ph.D. Production" (Berkeley: Office of the Vice President—Planning and Analysis, University of California, 1970). It is interesting to note that Breneman's description of the ideal program would lead directly to many of the recommendations in Chapter V.

We do not mean to suggest that this is an accurate description of any of our departments. Nonetheless we fear that the same situation, or a milder version of it, may appear in some places: we have been told of cases in which students' programs were extended for several years because of their continued participation as Teaching Assistants in particularly demanding courses.

The pressures to stretch out a degree program are not, of course, confined to the faculty. Particularly in a time of tight job markets, the student may be tempted to prolong his stay here. As financial resources at the University shrink staying becomes more difficult, but the pressure is still there. Why not put off the qualifying exams for six months? They are not a pleasant prospect. Why not take on an extra quarter, or year, as a Teaching Assistant before beginning the dissertation? The pay is better. Examples abound. The reason we must discourage such procrastination is that in the long run, both the student and the University pay dearly for it.

Over the last ten years there has been a dramatic shift in the support patterns for Ph.D. candidates, especially in the Humanities and Social Sciences. When most of our present faculty members were in graduate school, support was sporadic when it was forthcoming at all. Students spent a great deal of their time working as Teaching Assistants, or working outside the university to support themselves. Partly as a result of the Ford Grant, most Ph.D. students at Stanford receive financial support for most of the time they are here. This support is not princely, but it is sufficient to alleviate the need to spend much time in labor not directed toward the degree. We report with dismay that the Ford Grant apparently has not significantly reduced the time to the degree in most departments. There is little evidence of a shift in either the practices or the expectations of the department to parallel the dramatic increase in the time a student has available for graduate study. We note that the Committee on Financial Aid and the Committee on Graduate Student Teaching both suggest that in the future we move even farther toward divorcing the financial aid a student receives from the duties he performs. Insofar as their recommendations are implemented and more departments move to a pattern of graduate support like that in English, where the student does no more teaching than seems pedagogically desirable, we shall see even less in the way of onerous duties that interfere with graduate study. In many cases, an adjustment in mental expectations is overdue.

At this point we expect that many of our colleagues are asking themselves, "Why do they keep talking about timetables? The University exists to further the pursuit of wisdom, and wisdom does not come prewrapped in four-year packages." We ask you to believe that no member of the Study thinks it does. We would much rather not talk in these terms; we have been driven to do so by what we have learned of the unsatisfactoriness, irrationality, and wastefulness of our present, less structured approach to graduate education. If the Senate looks carefully at the information we have gathered and seriously examines the alternatives to the four-year Ph.D., we are confident it will reach the same conclusion we did. The cost of any alternative course—to the University, the faculty, and the students— is unacceptably high.

CHAPTER V

The Assessment and Reporting of Students' Performance and Prospects

Report of the Topic Committee

LETTER OF TRANSMITTAL

The committee was formed in the Spring Quarter of 1971 with the following charge:

> The degree candidate, to be successful, must meet departmental expectations satisfactorily. It is, therefore, essential for him to know what these expectations are and how his performance matches up with them.
>
> This committee will survey present practices—and satisfaction with them—relating to:
>
> 1. How, where, and when the student is informed of what the department expects of him in proceeding toward the doctorate.
> 2. How and when the student's performance is assessed.
> 3. How and when he is informed of his prospects for successful completion of his program.
>
> The committee will be concerned with informational materials, preliminary examinations, usefulness of grades, the university oral examination, and other aspects of the setting of departmental expectations, and assessing their realization by individual students. It is hoped that collation, comprehension, and reporting of the varied (and sometimes ingenious) measures in use will be of value to all.
>
> In addition, the committee may frame some recommendations in the area of its study.

We have studied the areas specified in the charge and our recommendations appear in this report. In addition, we have included certain topics related to the assessment and reporting of students' prospects that were not mentioned in the charge: advising, termination procedures, and some aspects of the admissions process. At times our study led us into areas only tangentially connected with assessment and reporting; though we sometimes share our perceptions on these topics, our recommendations deal only with issues directly related to assessment and reporting.

Much of our report has centered around (1) the flow of information between students, faculty, and administration, and (2) various mechanisms involved in graduate education: exams, reports, procedures. One may well ask: Why all these formal procedures? It is a valid question. The most effective programs may operate very well without a plethora of rules; the small doctoral programs in the Medical School show how very well indeed. Frankly, our committee has been less concerned with excellent programs than with questionable ones. Our recommendations may cause effective doctoral programs some inconvenience; we hope they will have a massive impact on some of the more shapeless programs. In the ideal community, law is unnecessary. Laws, rules, procedures are evidence of human fallibility, but they are also evidence of man's attempt to contain his own fallibility. Our study of graduate education at Stanford has provided ample testimony of academic fallibility, enough to justify legislation by the Senate, to which the Academic Council has delegated its responsibility to maintain educational standards and award degrees.

We realize perfectly well that mechanisms and information cannot make a graduate program, that they are necessary but far from sufficient. The role of this committee has not been to study what differentiates an excellent graduate program from a very good one: quality of the faculty; course content; philosophical coherence of the program; intellectual interaction of students and faculty. Our more humble task has been to make recommendations more concerned with "graduate training" than with "graduate education." Graduate education is the student's personal, intellectual, and professional growth through a graduate program; it is the ideal, but is so personal that it is impossible for any committee to ensure. Graduate training merely ensures competence, but it is the context in which real education becomes possible. So in this report we more often address the problems of graduate training, and consequently the tone of our recommendations may seem impersonal, normative, bureaucratic. We hope our discussion shows that we see our recommendations in a wider context. For example, the quasi-legal procedures that we recommend for graduate student termination read coldly, but will have great importance for students who feel they have been unfairly treated. Education is profoundly individual, and in the best of all possible worlds the Socratic-Platonic model of education would be the ideal. We hope our recommendations provide a flexible framework for graduate education.

One final point. Several members of this committee feel strongly that the most important single change to benefit graduate education at Stanford would be the introduction of the semester calendar. The committee is unanimous in its belief that the semester calendar would benefit graduate education in the Humanities and Social Sciences so enormously as to outweigh the difficulties and inconvenience such a change might cause in Engineering. The semester calendar was recommended by SES some four years ago and was never enacted by the Senate. We here recommend it again as a means of bolstering graduate programs in the Humanities and Social Sciences—the weaker branch of graduate education at Stanford.

The committee would like to acknowledge the assistance of all who made its labors more fruitful: especially Lynette Hall, Lois Amsterdam, Harriet Emerson, and Florine McIntosh. And to those whose assistance in the drafting, distribution, and final preparation of this report helped the chairman preserve some shreds of sanity: Rosanne Simon; Janet Perez; our typist, Suzanne Bennett; our editor, Muriel Bell; and most of all our Girl Friday, Nancy John.

February 29, 1972

PREAMBLE

Training and Certification

Graduate education at the doctoral level has two basic functions: the *training* of men and women to be competent scholars/teachers/researchers;[*] and the certification that certain men and women have successfully completed such training. The student desires both training and certification. But certification (the Ph.D.) is not merely a sign of approval for the student's benefit—the ultimate "feedback." Certification is a social act, by which the university's faculty publicly proclaims a student's competence in certain areas. For if certification had no meaning for society, the degree would be unnecessary; training alone would suffice. Some tension inevitably exists between the university's obligations to her students and her obligations to society; underlying many of the difficulties in graduate education is precisely this tension.

In some countries training for and certification by the doctorate are almost entirely the product of a master-apprentice relationship. A student is accepted by "his" professor; he does research and writes up a dissertation under his professor's supervision; when the professor approves the dissertation, it is accepted and the degree is awarded. Other members of the faculty may participate in a final oral exam, but otherwise the process is almost entirely restricted to the master and the apprentice. There are no course requirements, language requirements, qualifying exams, term papers, grades. We do not wish to debate the virtues of such procedures; rather we wish to make it clear that such a master-apprentice system is nowhere in effect at Stanford, apparent similarities notwithstanding.

At Stanford, the student is admitted by a department, pronounced qualified to proceed to the Ph.D. by a department, and recommended for the Ph.D. by a department. And, in addition to the University's residence and course unit requirements,[†] there are usually departmental course requirements, language requirements, etc. This is not to deny that in many cases the most important part of the research training is achieved within the context of a master-apprentice relationship, but the nature of American secondary and undergraduate education precludes the continental mode of graduate training. At Stanford, responsibility for competent training and reliable certification still remains with the department as a whole. We refer to this as the "collective responsibility" of the department: admission, qualification, termination, aid in finding a dissertation adviser, etc. The department, having admitted a student, may delegate certain responsibilities to an adviser or even to a Director of Graduate Studies (DGS), but they still remain at root departmental responsibilities. We discuss some of these responsibilities in more detail later in this report. Recognition that many of the subjects discussed in this report are the responsibility of the entire department should make the training more effective and the certification more valid. The Academic Council and the Trustees have granted individual departments the right to recommend students for admission to the Graduate Division and to recommend students for the degree. It is the proper function of the Dean and the Committee on Graduate Studies not only to monitor admissions and degrees (which they now do), but also to ensure that the departments fulfill their responsibilities to the students and the university at every level of graduate education.

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[*] The cumbersome term "scholars/teachers/researchers" is intended to reflect the diversity of careers for which doctoral training can prepare students. If hereafter we use "scholar" for the sake of brevity, it is not without recognition that Ph.D.'s are employed in a wide variety of positions in government, industry, and academe.

[†] For example, the University requirement that a student must have taken at least three units from each of at least four faculty members.

Assessment

Because graduate education at this University is far more complex than a master-disciple relationship, the student's progress and performance must be assessed at various stages before the final assessment of the candidate's research capacity as represented by his dissertation. Interim assessments have three functions:

1. DIAGNOSIS. They determine the student's weaknesses and strengths, and thus enable him and his department to plan a more effective or appropriate program of training.

2. CERTIFICATION. In most disciplines, the Ph.D. certifies more than the ability to complete an original research project—e.g., oral ability in a language; some breadth of knowledge;

control of minor fields; etc. Assessments provide the basis for certification in these areas.

3. CONSERVATION OF RESOURCES. Assessments may result in advice to a student to change his program, degree objective, or department; they may even result in termination from the University. Effective early assessments can save time and money for the student, faculty time and financial aid for the University, and, for society, a slot for training a more suitable person.

Flow of Information

One of the essential concerns of the Committee on Assessment and Reporting is the flow of information in the training and certification of a graduate student. We are concerned with the useful information that assessment at various levels can engender for student and faculty alike. We are concerned with the flow of information to the student: clear regulations and timetable; effective advising; diagnostic evaluations. We are concerned with the flow of information to the departments: application forms; timely and appropriate evaluations; improved record-keeping and administration. We are concerned with the flow of information to the Dean of Graduate Studies and the Committee on Graduate Studies: forms of reporting; assessment of departmental programs; clear departmental procedures. Finally, we are concerned with the flow of information to the University administration and the Academic Council: more comprehensive reporting by the Dean of Graduate Studies. In this report we will make recommendations in all these areas. Although an improved flow of information at the School, departmental, and individual level would not by itself effect a restructuring of graduate education at Stanford, we are persuaded that its impact would be far from trivial.

Director of Graduate Studies

Documents, procedures, and personnel can all be useful in improving the availability of information. To deal first with the question of personnel, it is of paramount importance that there be in each department someone accessible to graduate students who is fully cognizant of the University and departmental requirements and procedures concerning graduate education.

1. *Every department with a doctoral program shall have a Director of Graduate Studies (DGS).*

Most departments already have a DGS; the following is a a description of what the Committee believes the ideal DGS should be. The DGS is responsible to the department and the Dean for the operation of the graduate program, and should therefore be appointed by the Chairman in consultation with the Dean of Graduate Studies. It is the function of the DGS to ensure that departmental policy reflects University policy. The DGS will usually be chairman of the departmental committee on graduate studies.* In many departments he will be responsible for the assignment of advisers, as well as overall administration of financial aid to graduate students. Some of these responsibilities may be divided up among several faculty members in very large departments, but the ideal DGS is the repository of virtually all essential information about the graduate program. An effective DGS can dispel much of the confusion that arises concerning changes in financial aid policy, the availability of outside grants, changes in various University policies—matters that even a conscientious adviser has trouble keeping up with. With increasing numbers of students pursuing interdepartmental or special programs, the DGS can act as the informed liaison between departments or Schools.

In some departments, the Chairman performs the functions of the DGS whether or not he bears the title. In general, except in very small departments, such a combination of functions may result in some neglect of the graduate program, and should therefore be avoided.

Student Membership on Committees

The inclusion of graduate students on a department's Committee on Graduate Studies and its related committees and subcommittees increases the reciprocal flow of information between students and faculty considerably. In the many departments that already appoint students to departmental committees on admissions, advising, curriculum, etc., faculty response has been favorable. Student members bring unfiltered student reactions to proposals before the committee, and also enable the other students to keep abreast of possible changes in departmental policy. In some departments students already read and vote on admission folders; in others they participate in the formulation and evaluation of qualifying examinations. But this degree of participation is rare. In most departments students are found mainly on committees dealing with revision of the curriculum. This is an important assignment. It may be even more important to have student representatives on the departmental committees that consider revisions of the qualifying procedure, the advising system, and the university oral examination along the lines set forth in this report. We therefore urge all departments to include students on all the committees that discuss the other recommendations in this report.

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* In a few departments there is no such committee.

2. *Every department shall have student members on its committee on graduate studies. Student members might also appropriately be appointed to other committees dealing with aspects of graduate education and departmental governance.*

In some departments student members of committees have been appointed by the Chairman; in others they have been elected by the graduate students. We would hope that all departments will eventually have some graduate student organization, perhaps associated with the University-wide Graduate Student Association. That organization might then formulate a procedure for the selection of graduate representatives to the departmental committee on graduate studies. For at least this major departmental committee, the student representatives should somehow be selected by their peers; for less important committees the Chairman might simply appoint student members as he does faculty members.

Departmental Program

3. *Every department shall publish a Departmental Program of Graduate Study. The Program will be a compendium of information on graduate study in the department, including philosophy,*

objectives, prerequisites, requirements, and examinations. The Program should include a summary timetable of a normal program of study for the Ph.D.

Many departments already publish a description of their doctoral program. In some cases it is no more detailed than the statement in *Courses and Degrees*; in other cases it is a virtual encyclopedia of information about the discipline, the program, and the faculty members themselves. Here we will summarize the information we feel should be included in the Departmental Program, though we cannot provide a comprehensive list applicable to every department. The Departmental Program will be principally for the use of graduate students and faculty, but it should be prepared with potential applicants in mind as well.[*]

—Philosophical basis and objectives of the program
—Background information: size of department, job opportunities, placement
—Fields of concentration offered by the department
—Requirements for admission to the various programs offered
—Brief description of departmental facilities: special libraries, collections, research facilities in the department or available to members of the department
—Research interests of the faculty
—Interdisciplinary or special programs in which students may participate
—Financial aid, including discussion of research support mechanisms
—Opportunities for teaching
—Clear summary timetable of normal program of graduate study
—Requirements: residency, courses, units, languages, teaching, minor
—Advising program
—Department policy on grades and grade-point average

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[*] For further indications of what the Program might contain, see Appendix V-1, the Table of Contents for the exemplary "Guide to Graduate Study in Biology."

—Clear descriptions of examinations and qualification procedure
—Departmental and University procedures for denial of candidacy and for termination of candidates, including appeal procedures
—University oral exam: form and procedures
—Function and form of the dissertation; dissertation proposal; dissertation-reading committee
—Departmental governance (committees, etc.)
—Information on departmental graduate student association (if one exists)
—Miscellaneous information: conferral of degrees; Terminal Graduate Registration; various University regulations and offices

This may seem to some like an enormous amount of information. In fact in most departments it would not take more than twenty-five typewritten pages—really a rather small effort for the enormous benefits that would accrue to applicants, students, and faculty.

It is perhaps an idle fancy that one day even *Courses and Degrees* might contain, albeit in a much abridged form, a description that accurately reflects graduate study in a given department. For many potential applicants, especially those in foreign countries, *Courses and Degrees* provides their only view of the graduate program at Stanford. Perhaps after a comprehensive and realistic Departmental Program is published by every department, an abbreviated version of that program might find its way into *Courses and Degrees.*

ADMISSIONS

Assessment of a student's prospects for success in graduate study at Stanford begins long before the student arrives on campus, indeed even before completed application forms arrive at the Office of Graduate Admissions. The prospective applicant assesses his own strengths, weaknesses, and interests, as well as the quality and orientation of programs in his field at various universities. On the basis of his evaluation he decides to apply to certain institutions. This is the beginning of the process of assessment, and it is here that the flow of information must begin.

Distribution of Information

Realistic and up-to-date information about a department should provide the basis for an informed decision on whether to apply. Unfortunately such information is often unavailable, and the prospective applicant must make his decision on the basis of rumor, out-of-date catalogs, advisers whose information may be a generation old, and more often than not, the general reputation of the university. Given the enormous costs of graduate education to all concerned, the need for reliable, widely available information on graduate programs is apparent. The distribution of such information should be beneficial to all concerned: more selective applications would result in fewer forms to complete, fewer to be read, and hopefully a better fit between student and program. The Departmental Program proposed in the previous section would help enormously here. For example, Social Science departments with a heavily behaviorist orientation might discourage students of theoretical bent by including in their Program a description of faculty research interests and sending a copy of the Program to all prospective applicants. Similarly, even within the same discipline language requirements vary enormously from university to university, and a candid statement of departmental expectations in this regard would help students make more sensible decisions about graduate school in the light of their skills and deficiencies.

Many of the items in our checklist for the Departmental Program are of direct interest to prospective applicants, as departments that already send out supplementary material with the application form have recognized. The Office of Graduate Admissions is prepared to distribute copies of the Departmental Program to prospective applicants and to assist departments in preparing these documents in a format appropriate for mass mailing. Departments may wish to amend their Programs for this purpose, eliminating items of little direct interest to new students (e.g., procedures for Terminal Graduate Registration), and expanding others of immediate relevance. For example, departments that admit students by subfield (such as History and Psychology) should be candid about that, since it has certain implications about the nature of graduate training in those departments. Also, it has been suggested that departments give prospective applicants some indication of attrition rates and average number of years to the degree. Such information, though often embarrassing, would give prospective applicants a more realistic view of graduate education, a step toward honesty that can only be beneficial to everyone in the long run. Finally, it is important that the Departmental Programs be kept up-to-date. Many an unfortunate student has arrived on campus only to discover that the faculty member he expected to work with has left for Dartmouth or for three years' fieldwork in New Guinea.

4. *Every department should make available to the Office of Graduate Admissions copies of the Departmental Program (possibly in an amended version) for distribution to prospective applicants.*

The Office of Graduate Admissions will send copies of these programs to counseling centers at major colleges and universities, where they would be available to large numbers of undergraduates.

Application Forms

So far as the flow of information from the applicant to the department is concerned, the principal channels are his application form, his letters of recommendation, and his transcript. As the Admissions Information Sheet indicates, many departments already require supplementary material: portfolio (Art); tape of spoken French (French); written work (Classics, Drama, Musicology); list of courses and textbooks used (Physics). As the value of transcripts declines with the increasing use of Pass/Fail grading, and as the pressure of candidates on available places increases, more departments may wish to require more and different kinds of supplementary material than is currently the case. The language requirements, for example, pose a considerable hurdle in progress toward the degree in some departments, yet there is only the vaguest sort of question concerning language ability on the application form and no independent verification of the answers given there. We suggest that the Office of Graduate Admissions devise a "Language Form" to be distributed by the applicant to teachers who can certify his level of competence in stipulated languages. Departments such as History, Religion, English, and Comparative Literature, to whom foreign-language competence is particularly important, might wish to require the applicant to submit either the results of a standardized foreign language test of the Educational Testing Service or the language form proposed above.

The application form itself is revised virtually every year. Comments on the form are always welcome at the Office of Graduate Admissions. Suggestions for changes are considered every spring by the Dean of Graduate Studies and the Supervisor of Graduate Admissions before a new batch of forms is printed. There is little purpose in this committee's proposing revisions in a form that is constantly revised in response to changing needs or circumstances. Among the suggestions for changes that will be considered before next year's application form is printed are:

1. What purpose does a question on marital status serve on an application for admission? It would seem relevant only to considerations of financial aid.

2. The question "What will be your field of specialization?" should be altered or explained. Some departments take the answer to this question very seriously in deciding on admissions; others virtually ignore it.

3. The recommendation form should be thoroughly revised, to leave room for more substantial evaluation of a student's achievement and future potential. The present form encourages cryptic responses.

4. A question concerning the applicant's future potential as a teacher might appropriately be included on recommendation forms.

Department Chairmen and admissions committees should periodically review departmental needs, and transmit suggestions for changes in the application form or requests for supplementary material to the Office of Graduate Admissions by April 1 of each year.

The material in an admissions folder is evaluated by departments according to criteria—sometimes explicit, sometimes not—developed over time. These criteria and the procedures that implement them are seldom reexamined in the light of actual performance. Of course individual faculty members make such reappraisals in an unsystematic way: the value they place on recommendations of certain colleagues or on transcripts changes to reflect the performance of previous students. But it might be useful, especially in large departments, to make a more systematic analysis of recommendations, grades, Graduate Record scores, statements of purpose, language preparation, and the like, in the light of recent experience, attrition, the quality of students' work, etc. An interesting study of this sort was done by the Physics Department at MIT.* A periodic analysis of the admissions committee's track record should help departments make more informed decisions on admissions, and help the faculty greet new students with more realistic expectations.

Level of Admissions

On one further aspect of the admissions process, though it probably falls outside our charge, we wish to make a recommendation for the consideration of our colleagues. We believe that a department should not admit more students to its Ph.D. program than can possibly be continued, given limited financial resources and limited faculty time. Systematic overadmission (for example, twenty students matriculate but only fifteen can be kept on, even if all twenty perform satisfactorily) increases intradepartmental competition to a morale-destroying level. In Engineering, large numbers of students are admitted for an M.S. degree, though only a limited number can subsequently be admitted to the Ph.D. program. But those students are in bona fide Master's programs, and do not come to Stanford with the universal expectation of earning a Ph.D. Elsewhere the Master's degree is regarded merely as a step on the way to the Ph.D., and few students are admitted only for a Master's. These departments should accept into their doctoral programs only as many students as they can support and supervise until the Ph.D. is attained.* There should be no quota to cut at the end of the first year or at the qualifying procedure. Students admitted to a Stanford Ph.D. program should be admitted on the assumption that they will complete the prescribed course of study and receive the degree.

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* Phillip M. Morse and G. F. Koster, "MIT Physics Graduate Alumni," *Physics Today*, XIV (August 1961), 20.

ADVISING

Both as a person and as a scholar, a student matures in part by coming to terms with the way others perceive him and his work. Personal growth is beyond the purview of this committee, but successful professional socialization is both a measure and the end result of an effective graduate program. The first-year graduate student does not arrive on campus fully cognizant of the techniques, standards, and professional values of his chosen field; hence, without the mediation of a general adviser, the student and his department may differ markedly in their perception of his progress.

The General Adviser

The role of the general adviser can be divided broadly into two parts: (1) the communication of impersonal requirements, rules, procedures, timetables, and standards; and (2) the personal application of these general requirements, etc., to the individual student. Whereas the former might be largely accomplished by a satisfactory Departmental Program and by

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[*] Of course we do not mean to exclude the common practice whereby the department, on the basis of previous experience, admits thirty students with the expectation that twenty will enroll. We mean, rather, that each of those twenty should be able to continue through the program if his performance merits it.

interaction between graduate students, the latter requires the intervention of an experienced and sensitive faculty member.

Since in most departments the advising system appears to function adequately, and since successful advising requires a personal commitment on the part of individual faculty members, elaborate legislation in this area is both unnecessary and inappropriate. We therefore offer some elementary legislation, and largely confine ourselves to suggestions and exhortations.

> 5. *Every incoming graduate student shall be assigned a faculty member who will act as his general adviser for his first year of graduate study and thereafter until his acceptance by a research adviser. The duties of the general adviser include explanation of University and departmental procedures and regulations, guidance in planning a course of study, responsibility for keeping the student's records, representation of the student's views in the councils of the department, and assistance in finding a research adviser and a source of research support when such assistance is desired.*

Some students need very little help from the general adviser; he is most important to precisely those students who are least likely to seek help on their own: quiet, shy, or uncommunicative students, students with academic shortcomings, and students with personal problems seriously affecting their work.

General advisers should therefore be chosen expressly for their willingness to take the job seriously and make time available, and, where possible, for their demonstrated ability to deal with students sympathetically. In departments where the advisory workload is distributed throughout the entire department, faculty members who are temperamentally unsuited for general advising are sometimes forced into a role they cannot play well. Alternative forms of department service should be found for these professors, and effective advisers might in turn be released from other duties so that they can devote more time to advising. In most cases this would mean that fewer members of the department were engaged in general advising than at present.

The opposite extreme of an excessive concentration of the advisory workload should also be avoided. The committee has found one department in which the Chairman advises all students who are not working on dissertations. Consequently, he has little time for individual students and, when personality conflicts arise, no satisfactory resolution is possible. Even in the smallest departments, where all general advising is routinely done by a single faculty member (probably the Chairman or DGS), it should be possible for the student to switch to another adviser.

In addition to the customary responsibility of guiding a student through his academic program, the adviser should acquaint himself with the student in a more personal way, and be prepared to represent the student's interests and perceptions to his colleagues. The role of advocate implies not that the adviser always agrees with his advisee's requests or justifications, but that he will present them fairly to the faculty when decisions affecting the student are being made. The advisee seeking assistance should be able to speak frankly to his adviser without fearing that everything he says will be reported at a faculty meeting. Trust is essential if the student is to be candid about his preparation, personal problems bearing on his work, etc. When an adviser feels he can no longer meet his responsibilities to an individual student, he should initiate a change of advisers.

At present, a change in general adviser can be the occasion of considerable trauma. Given the vulnerability of the human ego, especially the academic ego, such changes will never be pleasant, but they can at least be made less painful for both parties. Advisers are generally assigned by the DGS (though in very large departments there is sometimes in addition a director of advising), and the DGS should routinely review all advising assignments at least once a year. Students should be encouraged to request a change of general adviser if they feel there is something to be gained by doing so. Routine reviews will enable reassignments—whether requested by the adviser or the advisee, or simply deemed desirable by the DGS—to be accomplished with less emotional and administrative difficulty.

"Weaker" students or students with interests not shared by any faculty member sometimes have great difficulty finding a research or thesis adviser even though they have passed the department's qualification procedure.[*] In some departments the student may not be qualified until he is accepted by a thesis adviser. In such cases the general adviser should regard it as his responsibility to help a student find a research or thesis adviser as early as is possible and appropriate in the specific discipline: in English it may not be necessary to have a thesis adviser until the end of the second year, whereas in Psychology the student must have a research adviser almost from the day he matriculates. Even if the student begins working with a research adviser in his first year, he should also have a general adviser for that first year.

The distinction between the research adviser and the general adviser is an important one. In some departments the advising load is widely distributed by matching faculty specialties with incoming students' proposed fields of interest. Such a system can have serious, and undesirable, consequences. It may lead to a premature channeling of students into subfields before they acquire a general acquaintance with the discipline and the department's offerings. Students who have rather casually specified a "field of interest" on the application form some nine months before enrolling may find it difficult or embarrassing to change "their" fields.

Student Advisers

Some departments, e.g. Statistics, have used graduate student advisers to supplement regular advisers. The advantages are obvious, and the idea is warmly commended by this committee. On many aspects of graduate student life, both professional and personal, advanced graduate students are better informed or have a more helpful perspective than the faculty. The use of student advisers can be structured in many different ways: student advisers can be selected by the students or appointed by the DGS; individually assigned or lumped in a resource pool; compensated or voluntary. All these details can be worked out at the departmental level, but the committee believes the idea merits the consideration of every department.

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[*] In Humanities departments a student will probably pass directly from a general adviser to a thesis adviser, but in most other areas a student has a research adviser from the very beginning (though he may not be the eventual thesis adviser). We use "research adviser" as the more general term.

Special Advising Situations

For a variety of reasons, some students have needs that cannot be met by the regular advising system. Some specific focus on these needs will be beneficial to both students and faculty.

Orientation Program. It is generally recognized that graduate student malaise is particularly acute among incoming graduate students. We therefore propose that

> 6. *Every department shall organize an orientation program for first-year graduate students.*

The purpose of the orientation program will be to discuss University and departmental requirements and procedures; to introduce faculty members and their research and teaching interests; to introduce the new students to the faculty and to one another; and in general to minimize the personal and intellectual isolation experienced by many first-year students. The orientation may take many forms: it may be organized by the entire department, or by the advanced graduate students; it may last a quarter or a full year; sessions may be held weekly or biweekly in the early fall, less frequently later on.

Special Advisers. Another category of students deserves special attention:

> 7. *One or more members of the department shall be specifically designated to be a resource in advising students with special problems or situations, such as foreign students, minority students, part-time students, students with writing or language problems, students with deficient or unconventional backgrounds.*

The designated faculty member or members would not necessarily advise all these students or indeed any of them; the principal aim of this recommendation is to make sure that an informed resource person is available to other advisers.

Placement Advising. Like the incoming student, the terminal graduate student has requirements that may not be met by the normal departmental machinery. Therefore we recommend:

8. *The Chairman of each department shall designate a faculty or staff member as Placement Coordinator. He shall collect and make available to students information gained formally and informally about job openings. He shall also serve as the department's liaison with the Placement Center and prospective employers.*

The Placement Coordinator will ordinarily serve as backup to the thesis adviser, whose information may not be complete. He should assist students who desire assistance in the preparing of applications and dossiers and in finding suitable employment. At the same time he should apprise the department of the placement situation and employment patterns that might affect graduate admissions and training. The position will increase in importance as anti-discrimination efforts lead to fewer graduates being placed through private grapevines and an increasing proportion of vacancies being publicly advertised. In a small department it may be appropriate for the Chairman or DGS also to serve as Placement Coordinator.

The Research Adviser

The relationship between the student and his research adviser is the most intense and important student-faculty contact in graduate education. In many ways the relationship resembles a marriage: it can be arranged, but not forced; when it goes wrong it is difficult to resolve from the outside; divorce is likely to be bitter. But the analogy finally breaks down: no one need marry, but a student cannot complete his Ph.D. without a thesis adviser.

There are a number of situations in which a qualified graduate student, i.e., one already admitted to candidacy for the Ph.D., may be unable to find a dissertation supervisor: the student may have so narrowly squeaked through his qualifying exam that no faculty member wants to take on such a marginal student; the interests of either student or research adviser may veer in unanticipated directions; a faculty member may take a position elsewhere; and finally, as is inevitable in a certain percentage of all such complex and highly charged human relationships, personality conflicts may make it impossible for the student and faculty member to continue working together.

The committee believes that each department has a collective responsibility to assure every student it admits to candidacy for the Ph.D. a dissertation supervisor. No department should admit to candidacy more students than it can reasonably provide with research supervision. In the case of irreconcilable personal differences, the department, and in particular the DGS, should make every effort to help the student find another dissertation supervisor, if necessary by exploring the possibilities of a new research topic as well as a new supervisor.

The following general principles should be borne in mind in dealing with students who are having difficulties securing research sponsorship:

1. A faculty member who turns down a Ph.D. student seeking his sponsorship should state his reasons frankly, even when these reasons are purely personal.

2. Every department has a collective obligation to find research supervision for all the Ph.D. students it admits to candidacy. Moreover, when a student's failure to obtain research supervision is due to reluctance on the part of a faculty member rather than absolute unwillingness, it is appropriate for departmental pressure to be applied on the student's behalf.

3. There may be the rare case in which a student, though unable to obtain Ph.D. supervision, nonetheless succeeds in carrying through his research and preparing a final draft of a dissertation. In this circumstance the faculty members of his department have an absolute obligation to provide for the approval or rejection of this draft dissertation, unless the subject matter of the thesis is so far outside their competence that they are simply unable to judge the dissertation.

Where the marginally qualified student in desperate pursuit of a research adviser is a recurrent problem, the department should reexamine the qualifying procedures and departmental standards that can admit to doctoral candidacy students universally deemed "too weak" to accept as thesis advisees. Such departments might wish to adopt a system employed with signal success by Electrical Engineering (which produces more Ph.D.'s than any other department) and, in a more informal way, Psychology: marginal students are not admitted to candidacy until they are accepted as a thesis advisee by a member of the department. Significantly, the graduate programs of these two departments are among the strongest at Stanford.*

In most Humanities departments there are few difficulties along these lines. All students eventually find an adviser, perhaps because in those departments the adviser is not traditionally obligated to provide or find support for the advisee. The financial aspect of the adviser-student relationship can cause difficulty when the student is wholly dependent upon his adviser (or his adviser's project) for support and his work contributes directly to that of his adviser. The student may come to feel that he is being "hired" to "do a job" for which he is "getting paid," and that the faculty member who is his "boss" will "fire" him for unsatisfactory work. Such an employer-employee model is a far cry from the kind of relationship the University promises the graduate student and should continue to promise him.

It is difficult to propose legislation to govern what is still a personal relationship, but some guidelines can be suggested:

1. Both faculty and students should perceive total financial dependence as a potentially serious problem, and a danger to be avoided. Alternative funding arrangements that will give students greater independence should be constantly explored, though we concede that such arrangements are not now generally practical or even possible.

2. The department can help ensure a communality of interests by selectively admitting those students with interests shared by the faculty, fostering immediate contact between entering students and faculty (see Recommendation 6), and requiring some apprentice work early in the student's career.

3. Students should not be dropped from projects without substantial advance warning; in general a Research Assistantship

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* Both departments were rated first in their field nationally in the "effectiveness" of their graduate program by Kenneth D. Roose and Charles J. Andersen in their survey *A Rating of Graduate Programs* (Washington, D.C.: American Council on Education, 1970).

should not be terminated in the course of an academic year unless the termination date was agreed to in advance or unless immediate alternative support can be provided.

4. The problems and tasks a student is given on a project should be legitimate by professional standards and contribute to his professional training.

Progress Reporting

In a later section of this report we discuss Reporting in all its manifestations. Here we are only concerned with the reporting of a student's progress that directly involves the adviser, whether it be the general or research adviser.

> 9. *An adviser shall receive from each advisee in the Spring Quarter an annual written statement containing the advisee's assessment of his progress during the preceding year and his plans for the forthcoming year.*

Such a statement should be given to both general advisers and research advisers. It will allow the student to be evaluated in the light of his own goals. The statement should be placed in the student's departmental file, which the adviser should maintain and update quarterly.

> 10. *The adviser shall prepare annually in the Spring Quarter a written report for each of his advisees, reviewing his record and accomplishment for the preceding year. This report should be included in the student's departmental file.*

These annual reports are primarily intended to serve as feedback to the student, and as a basis for planning the student's program for the following year. These annual reports by adviser and advisee will help avoid misunderstandings, assist in departmental planning, permit some degree of departmental monitoring of advisers, and encourage departments to move students through the program expeditiously.

EVALUATION: GRADING

The charge to this committee lists grading among the topics to be examined, and the SES Report on Graduate Education suggested grades as a topic to be considered by SGES. It is universally conceded that no grading system can convey the variety of student success and failure in graduate school. A student may be brilliant and sloppy, meticulous but unimaginative; he may have technical skills, but little conceptual ability, or vice versa. And yet the shorthand system called "grading" is widely considered useful, both inside and outside the University.

Much of the pressure for a uniform, University-wide grading system for graduate students ostensibly derives from the increasing number of graduates in interdepartmental programs or taking minor fields outside their department. This is a genuine problem. How can anyone evaluate a Comparative Literature transcript if professors of English, French, and German use different grading systems? The question is real, but no more pressing than the question, How can anyone evaluate a transcript in, say, Psychology if Professors X, Y, and Z use different grading systems? Students and faculty alike occasionally refer to grades as "a Jones B" or "a Smith A−." We suspect that the real, if unconscious, reason professors urge a uniform grading system is not so they can understand grades from other departments, but so they can understand the grades of their own colleagues.

Ideally, grades for graduate students have the following properties (listed in order of descending importance):

1. They are clearly understood by students and faculty in the department;
2. They are clearly understood by others in the discipline outside the University;
3. They are clearly understood by prospective employers; and
4. They are clearly understood across departmental lines at Stanford.

Our examination of grading practices at Stanford has led us to the conclusion that in too many instances, grades have *none* of the four properties listed above. Clearly, the situation cries out for reform, yet previous attempts at reform have all come to naught. Consider the fate of the SES proposal (Report VII, p. 22): "Graduate programs should adopt the simplified A-B-C grade system." This proposal was voted into effect by the Senate on October 28, 1971; it has already been abandoned. Since last year, it has been permissible to add + and − to graduate grades. The Business School, moreover, has recently instituted a completely different system.

Even if the A-B-C system had been preserved to denote "exceptional," "superior," and "satisfactory" work, would work that was no more than "satisfactory" commonly be awarded a C? Of course not. Because a "C" on a student's graduate transcript is disastrous in many fields, the faculty is wary of ruining a student's chances for future employment by giving such a grade. The + is often substituted for the "C," and sometimes even for the "B" by professors who award only "A" and +. The eccentricities of grading at Stanford and other universities could fill many volumes, and it is not our purpose to survey practice in this area. We merely wish to show that a simple, traditional system has failed when legislated for all of Stanford University. We are convinced that any effort we might make to legislate uniform grading policy for the entire University would be foredoomed to a similar fate.

Some have argued against any grades at all for graduate students, preferring written evaluations. While this is certainly preferable in small programs and small classes, many graduate students are still enrolled in lecture courses, where no feasible alternative to grading exists.

In the last analysis, we think the question of grading must be dealt with at the departmental level. Each department should have its policy on grading and the actual practice of the department clearly described in the Departmental Program. As an example we quote at length from an admirable document, *The Handbook of Graduate Studies in History at Yale* (September 1970):

> Course grades in the Yale Graduate School are recorded as Honors, High Pass, Pass, and Fail. The Fail grade is rare and disastrous. The Pass is an indication that the student completed . . . the work of the course, but at a level distinctly below that expected of a

> graduate student. The student who receives more than one semester grade of Pass is not meeting the standards of the Department and is in danger of being dropped. A grade of High Pass is awarded to those whose work is competent and fully adequate. The High Pass means the student has done all that was required of him and done it on time. Honors is awarded to those whose work is marked by distinction. Honors means the student has done more than merely complete the work, more than what was expected. Approximately half of the grades awarded to History students in recent years have been Honors.
>
> Plus and minus qualifications are often attached by the professor to the grade. The professor also submits a brief confidential evaluation with each grade. These evaluations are as important as the formal grade. . . .
>
> A course grade is a crude but necessary indicator. Poor grades warn the student that his work is below standard. Bad grades will disqualify a student from continuing. Failure to receive Honors in a research seminar in the student's intended dissertation area is not a good sign. A High Pass in a course far from the student's specialization, however, may not reflect on the student's ability. The minimum requirement for a first year student is Honors in at least one research seminar and a grade of Pass in no more than one course. To meet the Graduate School requirement for the Ph.D. (and hence also for the M.Phil.) a student must receive Honors for at least two semesters of course work. Students who fail to meet these requirements are likely to be dropped.

We think Yale's History Department has given its students a clear picture of the department's grading policy and the meaning of individual grades for a student's career in that department. We would like to see each department at Stanford do the same:

> 11. *Every department shall establish a grading policy for the graduate courses in that department. That policy, with a description of its application, shall appear in the Departmental Program.*

Where policy can be established for groups of departments or for Schools with a reasonable expectation that the policy will be followed, so much the better. But we regard the essential point to be that grading should follow an established, public policy, so that departmental statements on grading might bear some relation to actual practice.

EVALUATION: QUALIFICATION PROCEDURES

In the Preamble we mentioned the variety of assessments that a graduate student must undergo between matriculation at Stanford and conferral of the Ph.D. Some of these are continuous, such as quarterly assessments (grading) of course work and ongoing research work. But for almost all graduate students the most important assessments—and the most traumatic—are three formal procedures: qualification for the Ph.D.; the university oral examination; and final completion and acceptance of the dissertation. In this and the next section of our report we discuss the first two of these assessment procedures and make recommendations for their future administration. The dissertation itself is dealt with in Chapter VI.

Qualification: A Departmental Decision

Nearly all departments have some assessment procedure by which they "qualify candidates for the Ph.D." The names of these procedures vary widely between departments, as do the procedures themselves: qualifying exam; preliminary exam; comprehensive exam; general exam; evaluation; etc. Sometimes the procedure involves several steps, but the effect is the same: the department pronounces the student "qualified" to pursue the Ph.D. In most cases this will be the final certification of the student by the department. Thereafter he is usually responsible only to his dissertation adviser and his dissertation committee. For simplicity's sake we will be referring to this evaluation as the *qualification procedure.*

The committee believes strongly in the desirability of such an evaluation—a clear decision that forms a point of demarcation in the student's career. In a very real sense, the newly matriculated student is on probationary status. At the point of admission, decisions are necessarily provisional. But even considerable refinement of the admissions process would not obviate a later evaluation, for there would be undesirable consequences in making the decision to admit a student the final decision on his competence: it would create pressure for admission of the safe and conventional, and hence would create difficulties for minority applicants, for applicants from less prestigious colleges, and for applicants changing fields. The admissions process is obviously the principal point for the rejection of the unqualified, but those admitted can be regarded as "pre-candidates" who have yet to demonstrate their qualifications. Needless to say, the University and the departments are nonetheless under an obligation to treat these students fairly and humanely.

This probationary period ends when the student is qualified for the Ph.D. The department affirms that the student has the intelligence, knowledge, and ability to complete a research project and present it as a dissertation. During the qualification procedure, the department should assess not only the research ability of the student, but also his general knowledge of several areas within the discipline and his ability to communicate his knowledge and ideas. We speak about this in some detail on pages 66–69 below. Though an early evaluation of research potential is essential, knowledge and the ability to communicate it may be equally important in determining the professional effectiveness of a Ph.D. in industry, government, or academe. Therefore, considerable attention must be given to the nature of the evaluation procedure.

> 12. *Each department shall establish procedures for qualifying students for the Ph.D. These procedures shall be published in the Departmental Program of Graduate Study. As a result of the qualification procedure, a student shall be either (1) qualified for the Ph.D. or (2) explicitly terminated. In reaching the latter decision, departments shall follow the procedural guidelines set down in Recommendation 24.*

The committee sees the decision for or against qualification as the most important decision the department makes about a graduate student after his arrival at Stanford. In an important sense it represents a completion of the admissions process, and therefore it should be a formal decision made by the entire department or by a subcommittee acting for the department. It is important that this decision not slide off onto the DGS or the student's adviser. We believe it to be detrimental to the relationship between the student and his general adviser if the adviser is perceived as having the decisive say in the evaluation process. In such circumstances the student may become excessively dependent on his adviser's good will early in his career, and his exposure to other faculty could be consequently diminished. As we said in our discussion of Advising, the adviser should represent the student's interests to the department rather than make important decisions about his future. For these reasons qualification should be a departmental decision; the department decided to admit the student and can discharge its responsibility to him only by a collective evaluation, whether positive or negative. And the formality of the procedure will contribute to the care with which the decision is made —as well as to the clarity of the student's status. Such clarity has sometimes been lacking in the past, in the minds of both students and faculty. The consequences of such ambiguity can be disastrous.

13. *The decision on qualification shall be made by the entire department faculty, or by a committee acting on behalf of the entire faculty.*

Admission to Candidacy

This qualification procedure is an important milestone in the student's graduate career and should be perceived as such. Since the student is now approved by his department as a candidate for the Ph.D., this is an appropriate moment for his formal admission to candidacy. The "Application for Admission to Candidacy for the Ph.D." (commonly called the Green Sheet) is the most important form kept by the Graduate Division on current Ph.D. students. Yet the form and concept of "candidacy" have not been fully exploited as mechanisms for marking the progress of students. The form simply states "Prerequisite to such admission [to candidacy] is the successful completion of departmental preliminary procedures." But many students delay application. A recent case points up the absurdity: a student who had been out of residence for some years returned to the campus, applied for candidacy, and took his university oral examination a few days later (he failed). In this case admission to candidacy was meaningless. We have found that the timing of the application and subsequent admission to candidacy have become rather idiosyncratic, even within departments, and that the variations in practice serve no useful purpose. The qualification procedure should be considered tantamount to admission to candidacy. The Green Sheet, somewhat revised, will be submitted by the student to his department as soon as he is informed that he has been qualified. In approving the application, the department Chairman will in effect inform the Graduate Division of the results of the qualification procedure.*

> 14. *"Qualification for the Ph.D." should be considered synonymous with "Recommendation for Admission to Candidacy." The outcome of the qualification procedure shall be (1) admission to candidacy, or (2) termination. The department shall inform the Graduate Division Office of "qualification" by submission of the "Application for Admission to Candidacy for the Degree of Doctor of Philosophy" (Green Sheet). The Green Sheet shall be revised to reflect its new function.*

Once the student has been qualified for the Ph.D. and admitted to candidacy, he is no longer on probationary status. His future position in his department should be considered secure, subject only to continued satisfactory progress toward completion of the remaining Ph.D. requirements. Further requirements—e.g., language exams, the university oral, the dissertation—should not be seen as challenges to the candidate's right to continue, but as checkpoints that it is assumed he will pass through. Failure of any later examination, including the university oral, should not be automatic grounds for termination. All departmental requirements unfulfilled at the time of admission to candidacy should be recorded on the Green Sheet, along with estimated dates of their fulfillment. This will provide a framework for subsequent evaluation of the candidate's "satisfactory progress toward the degree."

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* On admission to candidacy, see Appendix V-2.

> 15. *Admission to candidacy should imply that the student's position in his department is secure, subject only to continued satisfactory progress toward completion of remaining departmental and University requirements. Unfulfilled requirements should be recorded on the "Application for Admission to Candidacy for the Degree of Doctor of Philosophy" (Green Sheet).*

The change in the student's status should be reflected in departmental procedure. We suggest on pages 85–88 below certain procedures to govern the termination of students for academic reasons both before and after admission to candidacy.[*] The termination of a student admitted to candidacy essentially involves a retraction by the department of its favorable assessment at the time of qualification. The department must give adequate justification for such a retraction, and the student may appeal its decision to the Dean of Graduate Studies. The candidate's rights during termination proceedings are discussed in our section on Procedures. Our intent is to encourage departments to eliminate unqualified students early, and to provide the others with reasonable security for the duration of their graduate career at Stanford.

> 16. *It should be the exceptional case that a student previously admitted to candidacy is terminated for academic reasons. Such exceptional termination proceedings shall follow the guidelines set down in Recommendation 25.*

Termination through Denial of Financial Support

A negative evaluation must be communicated to the student directly. In the past, a student has sometimes been formally allowed to continue in the program, but the department has expressed its dissatisfaction with his performance by markedly reducing or altogether cutting off financial support. While the way financial support is distributed may vary, it should never be used as a mechanism for informing a student indirectly of the department's desire that he leave. When the Four Year Guaranteed Assistance (FYGA) program was instituted in the Humanities and the Social Sciences a few years ago, some departments expressed dismay because they felt the award preempted their authority to terminate unsuitable students. This reaction rested on their habit of terminating students by withdrawing financial aid rather than declaring them unqualified. Such a practice is dishonest and cowardly, and the resultant bias in favor of students of independent means is an unacceptable anachronism, or at least should be. On the other hand, in a time of shrinking resources, there may be occasions when a department must remove or reduce the financial support of students it considers qualified to continue. The department should make the situation clear to the students, assure them of their continued welcome, and do everything in its power to secure loans, research assistantships, or other part-time work for the students involved. Departments should exercise considerable care in this area lest they find themselves "starving out" unwanted students, effectively terminating them without reference to established departmental and University procedures for termination. Departments and the Dean of Graduate Studies must remain vigilant that the allocation of financial aid does not supplant or circumvent termination procedures.

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[*] The termination of students for non-academic reason lies outside the scope of this report.

17. *Departments should be direct in terminating students whom they consider unqualified. Denial or removal of financial aid should not be used as an indirect mechanism for terminating such students. All terminations shall be explicitly in accord with the guidelines set forth in Recommendations 24 and 25. Department faculties, the Committee on Graduate Studies, and the Dean of Graduate Studies must remain vigilant lest financial aid be used in place of recommended procedures as a means of termination.*

Timing of Qualification and Admission to Candidacy

In our Preamble we said that early assessments can help conserve scarce resources: for the student (time and money); for the University (money, faculty time, and space); and for society (the limited number of places for graduate training). This is not mere rhetoric. It is not uncommon for students who have spent four years or more in residence to depart with a dissertation barely begun. Despite having made extensive use of faculty and University resources and having spent what often is the most creative period of life in graduate school, some of these students will never receive a degree, to their understandable embitterment. The waste of resources we speak of is not some cold notion derived from cost-benefit analysis; the term describes a real loss of years, of careers; it alludes to some dreams shattered, and to other dreams never realized because the places in graduate school were all taken. No graduate program can expend resources with 100 per cent efficiency, but all departments should consider it their urgent obligation to reduce waste to an absolute minimum. An early and definitive qualification procedure will be extremely helpful in cutting losses. At the same time, of course, it can serve many positive functions; for example, it can help point the student toward a field of specialization for dissertation research.

Many of the students who are destined never to complete a dissertation can be identified early on by an effective evaluation process. At present some of these students drift through graduate school without ever being formally qualified by the department; others are considered for qualification so late in their careers that they are allowed to slide through largely out of embarrassment. Indeed, the department sometimes lets a student remain precisely because it believes "he will never finish." His continued presence thus poses no threat to the department's cherished standards and external reputation, yet the department avoids the trauma of an explicit dismissal.* This is unforgivable in both professional and human terms. There are also students the department feels it has discouraged from continuing who remain anyway, often oblivious to the "discouragement." For all these reasons we feel that the qualification procedure should be ineluctably clear-cut, i.e., a formal departmental yea or nay, and that it should occur sooner rather than later in the student's graduate career.

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* A recent study tries to show that this practice is financially harmful to the student and beneficial to the faculty. David W. Breneman, "An Economic Theory of Ph.D. Production" (Berkeley: Office of the Vice President—Planning and Analysis, University of California, 1970).

Although nearly all departments now claim they qualify their students in the first or second year of study, there is in many cases a considerable gap between official departmental policy and actual departmental practice. Qualification by the end of the second year certainly gives departments an adequate opportunity to evaluate a student's potential, and leaves two years of residence (four years being usual) for research and the dissertation. Occasional exceptions will have to be made; for example, for students who enter with deficient backgrounds, who suffer a prolonged illness, or who must leave to bear a child. In response to an SGES survey, department chairmen have indicated their feeling that some minority students, while undergoing the usual qualification procedure, should be allowed additional time to prepare. Obviously there will be other exceptional cases in which qualification may legitimately be deferred beyond the second year, but all such exceptions should be subject to advance approval by the Dean of Graduate Studies. In some departments later examinations (e.g., a language examination) may be necessary, but the committee believes that every department should be able to make a basic evaluation of every student's qualifications within two years of their matriculation in the doctoral program.

> 18. *The qualification procedure will take place during the student's first two years of full-time study in a doctoral program at Stanford. A student who has not been admitted to candidacy will not be permitted to register for his third year. Any exception to this regulation must be approved in advance by the Dean of Graduate Studies.*

First-Year Diagnosis

In some departments, such as Chemistry and Psychology, the qualification procedure is completed by the end of the first year. This is commendable; the earlier a student's status is clarified, the better for department and student alike. But few departments feel that they can come to a decision before the second year. Students in such departments, who will be qualified or terminated during the second year of doctoral study, should be given some formal assistance at the end of the first year in preparing for the qualification procedure. Assistance should take the form of a written diagnosis, in which the department (or departmental committee) discusses the student's strengths and weaknesses and outlines a program by which he might best prepare himself for qualification. The first-year diagnosis may seem to some students like a mini-qualifying-exam, another hurdle to be overcome (see Appendix V-3). We see it, rather, as an aid to the student in planning his preparation for the qualification procedure. The written diagnosis should be transmitted to the student by his adviser, who can use it in helping the student plan a detailed program of work for the summer and the second year.

> 19. ***The department shall make a diagnostic evaluation of every student at the end of the first year of study if he has not yet been qualified for the Ph.D. The written report of this diagnosis, which is intended to assist students in preparing for qualification in the second year, shall be prepared by the department (or a departmental committee) and transmitted to the student by his adviser.***

Renewal of Candidacy

Candidacy currently lasts for five years, and is indefinitely renewable. The duration and renewability of candidacy has been the subject of much discussion. We are convinced that candidacy must have some fixed term; otherwise some students would remain in the active file of the Graduate Division Office for upward of half a century. Some faculty members have suggested that the term of candidacy be reduced, or that it be made nonrenewable. Both suggestions are intended to shorten the length of time to the degree. The intention is admirable. An SGES study of the length of time to degree of recent doctorates in Humanities and Sciences, a study based on the 702 doctorates awarded in 1969–71, shows a range from a mean of 4.2 years in Chemistry to 9.4 years in Drama, with a mean for the Humanities of 6.95 years and for the entire School of 5.8

years. (See the table on p. 100 for a department-by-department breakdown in Humanities and Sciences, and Appendix II-2 for detailed statistics on every active Ph.D. program in the University.

However appalling these figures may be, the committee does not believe that either a shortened term of candidacy or nonrenewable candidacy is the solution. Five years strikes us as a reasonable term; besides, shortening the term means little if candidacy remains renewable. Nonrenewable candidacy would be unrealistic and unfair; there will always be students who, for valid personal or professional reasons, need more than the usual time to complete their degree. Once renewals are permitted, however, they become another point at which some students can be continued and others terminated without any equitable procedure. Departments are sometimes tempted simply to allow an unpromising student's candidacy to expire, rather than make an explicit decision to terminate him. As we have emphasized throughout this report, departments should not evade their responsibility to the student by resorting to such indirect methods. Upon expiration of candidacy, therefore, we believe the department should either recommend renewal of candidacy or initiate termination proceedings as described in Recommendation 25.

20. *Candidacy shall expire after five years. Upon expiration of a student's candidacy, the department shall either recommend renewal of candidacy or initiate termination proceedings as described in Recommendation 25. If neither action is completed by the date of expiration of candidacy, candidacy shall be renewed by the Dean of Graduate Studies for one year, during which the department must either recommend renewal or terminate the student.*

The Nature of the Qualification Procedure

Criteria for Qualification. In the preceding pages we have made a number of legislative recommendations concerning the timing, reporting, and legal implications of the qualification procedure and admission to candidacy; we have said virtually nothing about the nature and purpose of the qualification procedure itself. In the last analysis, it is for the department to decide who is "qualified" to pursue the Ph.D., just as the department must determine what is acceptable research in its discipline and what kinds of admission criteria are applicable. In these areas committees can suggest, cajole, and urge, but they cannot recommend legislation that would impose external standards, e.g., a particular form of dissertation, on departments. Departments are not totally autonomous, of course; degrees are awarded by the Academic Council, and much financial aid flows from the Dean of Graduate Studies. If the practices or intellectual standards of a department are unacceptable to the Dean, he may withhold financial aid or the right to admit graduate students. As a final sanction, the Academic Council may withdraw the authority to grant graduate degrees. In a time of fierce competition for extremely limited fellowship funds within the University and even fiercer competition in the job market outside, departments have an obligation to reevaluate their own programs and standards for admission, qualification, and research. In the following pages the committee discusses certain aspects of qualification, including a summary treatment of various evaluative practices now in use throughout the University, in the hope of assisting departments in reassessing and revising their own programs.

Qualification procedures often become encrusted with ritual. They may be revised from time to time, but the changes are often merely formal: two fields instead of three, a different choice of fields, etc. Change of itself is not always a virtue, but in this area we think it is. What is new at least has to be explained; the old is because it is. But ideally changes should go beyond tinkering with form. An essential first step is to achieve a clear departmental consensus on what is being assessed: the kinds of skill, knowledge, and achievement the department deems important. This sounds simpler than it is. For example, in some literature departments the qualifying exam is based on a reading list, but the department is unclear whether the breadth or the depth of the student's reading is being assessed. In principle, of course, it is often both, but individual examiners may in fact be looking for different things. We have all seen well-trained undergraduates whose knowledge of books and facts and veneer of sophistication make a striking impression when they begin graduate school, but who come to grief later on because they lack creativity, research skills, or the ability to synthesize. A well-trained but ultimately unsuitable student often slides through qualifying exams and the qualification procedure simply because the procedure overemphasizes the accumulation of knowledge. The department should self-consciously reassess the criteria it uses to pronounce a student "qualified" to move on to dissertation research. We cannot prescribe these criteria, but we can offer some suggestions based on our study of departmental practice throughout the University.

1. INTELLECTUAL BREADTH. The student's interests will narrow considerably after he is qualified and begins his dissertation research. As we said in the Preamble, the Ph.D. means more than the successful completion of a single research project, and the early years of graduate education are the time for acquiring some breadth of knowledge in a field. In some departments this is assured by required courses or course distribution; in others by comprehensive or general examinations, or a required distribution of fields on more narrow examinations. Whatever the mechanism, the qualifying procedure should ensure intellectual breadth; students should not be qualified on the basis of a single skill such as the ability to translate, or the completion of a single research project, or the passage of a single specialized examination.

Breadth of preparation is desirable not only on intellectual grounds, but because it will increase the flexibility of the Ph.D. in his future professional career—a consideration that is assuming increasing importance. The rate of obsolescence of specialized knowledge in many scientific fields is startling, and an inflexible, narrowly competent scientist is doomed. For the social scientist, too, constantly changing problems of man and society demand flexibility and openness to new research needs and interdisciplinary approaches in both teaching and research. Even the humanist, by vocation the most conservative of intellectuals since he uncovers, preserves, and interprets the past, must be broadly trained if he would bring the ideas and values of the past to bear on our technologically oriented society.

The doctoral program is not a liberal education; it is training, largely research training, in a particular discipline. But in our opinion and the opinion of many of our colleagues, the long-standing tendency toward increased specialization has gone far enough.

One final caveat on breadth. We do not necessarily mean coverage in the traditional sense: all of English literature, say, or all of psychology. That is one way of defining breadth, but by no means the only way. We discuss some others below.

2. ABILITY TO SYNTHESIZE. Truly creative research in most fields is dependent upon the ability to synthesize. True, the application of established ideas, systems, or procedures to a different kind of problem is perhaps the most common sort of dissertation research. Even in such traditional projects, however, the need for synthesis is obvious; in fact, these projects ultimately come down to the juxtaposition of materials not previously seen (or shown) to be related. Occasionally a significant discovery arises from mere observation: an unexpected experimental result or the chance discovery of a new manuscript. Even in these rare cases a student is expected to explain the significance of his discovery, i.e., to relate it to other research. We cannot imagine the acceptable dissertation that does not contain some synthesis, some new integration of knowledge. The most inconsequential dissertations are produced by students unable or unwilling to see connections. Such students are technicians; they should not be in a degree program that requires original research. We therefore suggest that departments incorporate some assessment of a student's ability to synthesize in the qualification procedure. Courses or a narrow research project may not be sufficiently indicative; general examination questions or an oral exam may be more useful. A serious assessment of this ability during the qualification procedure would help cut down the number of instances in which an unimaginative candidate simply accumulates a mass of data until he wears down his committee into accepting it as a dissertation, or himself abandons it out of boredom, puzzlement, or frustration.

3. ABILITY TO COMMUNICATE. Research is socially useless

unless it is communicated to others. In the University, the discovery of knowledge and ideas is intimately associated with their preservation and communication. The University requires that the results of student research, the dissertation, be written up and published on microfilm and in *Dissertation Abstracts.* Here again, the qualification procedure might provide a convenient opportunity to assess a student's ability to communicate his ideas and discoveries, either orally or in writing. In departments producing Ph.D.'s largely to staff college and university faculties, an oral examination at some point during the first two years seems particularly appropriate. The report on Graduate Student Teaching (Chapter VII) discusses the relation between communication and graduate education in greater detail.

4. RESEARCH ABILITY. The Ph.D. will remain a research degree, even if the redefinition of the dissertation requirement suggested by the Committee on the Ph.D. Dissertation is adopted. We concur in that committee's recommendation that a student be actively involved in a research project as early in his graduate career as possible. In many departments this is already standard practice; we recommend its extension to others. Although excessive emphasis on research early in a graduate student's career may narrow his interests prematurely, some early research experience is invaluable in letting the student know what awaits him when he begins his dissertation. The high rate of attrition during the dissertation years in some areas suggests that many students are ill-prepared for dissertation research, and in fact would leave the program sooner if they knew what was expected of them. From the point of view of the faculty, an early research experience might yield a good deal of useful information about the student. We therefore believe that some research experience might well be a prerequisite to qualification. Such a requirement would have the further advantage of easing the transition between the learning and doing phases of graduate education. The bifurcation of graduate education, which is the cause of so much unhappiness among students (especially in the Humanities), must be overcome before a graduate program can claim to be a coherent educational experience.

Mechanics. We have already said in our section on Advising that a student's general adviser should not function as his principal evaluator. If an adviser has the decisive voice in the qualification procedure, he will be perceived by his advisee as a judge, and the relationship between them will necessarily suffer. Again, no one member of the faculty should have sole responsibility for setting and grading an exam and reporting the results to the department, especially if he has advised students in their preparation of the field under examination. Several members of the department should review a qualifying exam before it is administered, and the papers should be read by at least two members of the faculty. This is already the case in most departments, and we think the practice should be universal.

In recent years there has been a praiseworthy trend away from a single qualifying exam toward a multiphase process we have referred to somewhat awkwardly as the qualification procedure. Division of the examination into several parts, to be taken at different times—as for example in Philosophy, where part of the preliminary exam must be taken in the first year—permits both students and faculty to use exam results for diagnostic purposes. Whether or not the student passes, he can draw on the experience in preparing for the next part of the exam. Another advantage of the more complex qualification procedure is the variety in methods of assessment that it permits in a single department: written and oral exams (Physics); exams and research projects (Communication); course grades and oral exam (Electrical Engineering); long papers rather than exams (Education and Comparative Literature); general synthetic exam and specialized exam (Biology); student options (Philosophy, Pharmacology, English). We urge departments that have but one qualification hurdle to reassess their procedures with the assistance of their graduate students.

One final comment. When a student successfully completes the qualification procedure, the department has in principle pronounced him qualified to complete the Ph.D. by engaging in an original research project. Unhappily, there are cases in which no member of the department will consent to supervise the dissertation of a "qualified" student. This situation arises most often in departments where dissertation students derive financial support from their work on faculty research projects, and where the weak or marginal student is not just an inconvenience, but a drain on resources and perhaps even a threat to the project. As we pointed out on p. 50, in the Advising section, it is a bizarre notion of "qualification" that allows the members of a department collectively to pronounce a student "qualified" but then individually to refuse him as "not qualified enough for me." We emphasize again: a department has a collective responsibility to the students it declares qualified, and departments in which adviserless candidates are a chronic problem should take a long, hard look at their criteria for qualification. We have suggested a change in the qualification procedure that might help solve the problem: no student can be declared qualified until a member of the faculty agrees to serve as his dissertation adviser. Such a procedure has flaws; such commitments cannot be binding. But it would help, particularly by bringing more clearly before the eyes of some departments the novel idea that "qualification for the Ph.D." really is qualification for the Ph.D., and that consequently unqualified students should not be "qualified." If this dictum sounds terribly banal, we can only report that adherence to it is by no means universal.

Qualification Methods

Throughout the University, there are many interesting variants of the qualification procedure. We hope the following survey will be useful to departments where revision of the qualification procedure is under consideration. Our information is based on the responses of department Chairmen to an SGES survey in the spring-summer of 1971. Some of the material may therefore be out-of-date, and unhappily some may reflect the ideal world of *Courses and Degrees* rather than the real world of teachers and students. But whether or not our examples are in current practice, they can provide a catalyst for others.

Course Work. In nearly all doctoral programs, grades vary over so narrow a range that the GPA cannot be used as the major criterion in qualifying students for the Ph.D. Engineering is an exception, but even there the GPA is essentially used as a preliminary hurdle before admission to the qualifying exam. Where core courses are required in the first year, some departments also require a minimum performance in those courses for continuance in the department; in Anthropology, for example a B+ average is required in the five first-year core courses. Heavy reliance on performance in core courses is fraught with danger, however. These courses are sometimes assigned to the members of the faculty with the fewest research students and the least usefulness to the department as undergraduate teachers. The result is that core courses are often among the worst-taught courses in the department, and therefore cannot be given much weight in evaluating student progress.

If core courses are required of graduate students, care should be taken in the assignment of faculty, and some choice should be afforded the students (as in Psychology, where five out of nine core courses are required). Core courses work best in areas where the core is generally agreed upon and forms a necessary prelude to advanced work in the discipline. Economics requires general examinations in price theory and income theory at the end of the first year, following year-long core courses in those areas.

Courses are also used to "substitute" for fields on the qualifying examination. Such a requirement is reasonable only if there is effective evaluation of work done in courses. But except in the sciences, rigorous course evaluation is becoming less and less common, and the distribution of graduate grades in many departments is so narrow as to be useless.

Written Examination. The written examination remains the most common method of qualification. We have already suggested that the written exam should be broad enough to test the student's ability to integrate and synthesize. Biology specifically requires a demonstration of integrative competence on its written qualifying examination.

Oral Examination. Many types of oral examinations are incorporated into qualifying procedures. Some examples are:

1. Oral examination on previous course work (Slavic; Physics).

2. Oral examination on a special field (Physics; Mineral Engineering; Biology).

3. Oral colloquy on a broad topic, not necessarily the research area (e.g., on a genre in Comparative Literature).

4. Oral on a wide variety of topics. The elaborate schemes of Electrical Engineering and Aeronautics and Astronautics—ten orals of twelve-fifteen minutes each, with students permitted some weighting of exam results—allow students some control over examiners and material. Applied Mechanics has four orals of thirty minutes each. Although these exams can theoretically be very general, by various mechanisms the student can limit a substantial proportion of them to his principal interests. These systems were devised as results of experiments which demonstrated that several short exams with one or two examiners provide more information than a single long exam with more examiners.

All these exams are departmental oral exams, which precede the university oral.

Research Project. Relatively few departments specify a research project as part of the formal qualification process, though in many cases research done for courses or as directed work is examined when the student's record is reviewed prior to qualification. Only Psychology seems to make qualification contingent on the successful execution of a research project. There are dangers in such a narrowly defined qualification procedure—especially when, as in the case of Psychology, this evaluation is conducted at the end of the first year. Communication and Food Research also use research projects in their qualification procedure, but in combination with other methods of evaluation. Communication requires research projects in both the first and second years, which are examined together when the student is to be qualified.

Paper to Replace an Examination. Comparative Literature allows the student to prepare a paper on a field in lieu of an examination. In Education, some committees—the approximate equivalent of departments in the other schools—permit a previously written paper to be submitted in place of an individual exam question. The latter system has the advantage of evaluating a student on the basis of what he considers, rightly or wrongly, a good piece of work.

Combination of Methods. Obviously, many departments use some combination of the methods listed here. In some Engineering departments, for example, there is a minimum GPA that must be met before a student is permitted to take the qualifying exam. Communication, Food Research, and Engineering-Economic Systems are examples of departments that examine a wide variety of data in qualifying students.

Early Diagnosis. Classics has given sight examinations in Latin and Greek to arriving graduate students. This provides information of immediate usefulness to both adviser and student in planning the student's program, and also provides the department with a base from which to measure individual progress. Such a system is particularly appropriate in fields where progress is clearly cumulative, such as foreign languages.

Paper with Oral. We are not aware of any department at Stanford that now requires the student to submit a paper (on a required topic, a selection of topics, or a free choice) and then undergo an oral examination on the paper and related topics. Some departments might wish to try this procedure.

Reading List. The standardization of undergraduate programs in some disciplines, e.g., Physics and Chemistry, has made it possible to examine students on the entire field. But in fields such as History, where there is no standard undergraduate program, an exam that attempted total coverage would necessarily be superficial. English, which examines students on all of English and American literature, allows a great deal of choice on the qualifying exam with the hope of encouraging preparation in depth of a few authors in each period. One method of achieving both breadth and depth is to provide the student with a list of books or topics he is expected to be familiar with, thus allowing him to study those books and topics in some detail.

Chemistry, Biology, Pharmacology, and English all provide reading lists of one sort or another.

Constant Ongoing Evaluation. Pharmacology gives the student the option of taking an oral at the end of each of the first six quarters instead of one general oral, but of course such a system could only work in the smallest departments. The Business School's Ph.D. program and Classics both review every student's work at the end of each quarter; in both cases, every professor is expected to prepare a report on every student in his classes every quarter. The disadvantage of such a system is that the evaluations become rather routine, and, in fact, the crucial evaluations are made on the basis of written or oral examinations. But in theory, at any rate, a system of ongoing evaluation with effective feedback to students could be very valuable.

Student Designation of Committee and Subject Matter. Some departments permit the student to choose his evaluating committee and define the areas on which he will be examined. This is almost universal practice for the university oral, but considerably rarer for qualifying exams. In some areas of Education, in Modern Thought and Literature, and in a new, experimental program in English, the student is given considerable latitude and corresponding responsibility in designing the area he proposes to present for his qualifying examination. As we mentioned above, the elaborate mechanisms used by Electrical Engineering and Aeronautics and Astronautics allow the student considerable choice in the subjects covered by the ten oral exams and their relative weight.

Perpetual Motion Examination. A system not now in use at Stanford, but perhaps of interest to some departments, is the perpetual motion examination. A department sets an exam on a different area every month, repeating the areas about once a year. Students are encouraged to make as many tries as they like. Failures do not count, but a certain number of exams have to be passed by the end of the second year. The department might, for example, require four passes out of nine fields, with the student having two chances at each field. Princeton's Chemistry

Department and Cal Tech's Psychology Department have used this method. The advantage is that students can get their strong fields out of the way early, prepare for exams at a steady pace, and avoid major traumas; the disadvantage is the potential for repeated trauma and frustration at failure.

EVALUATION: THE UNIVERSITY ORAL EXAMINATION

Why a University Oral Examination?

The Ph.D. degree is formally awarded by the University as a whole, not by individual departments. Although the responsibility for admitting, educating, and recommending Ph.D. candidates is effectively exercised by departments, the University exercises control over the Ph.D. degree through general regulations of the type recommended throughout this report; through the university oral and other examinations; and through the ultimate power of the Academic Council to disapprove the awarding of any individual degree.

It is sometimes thought that in earlier and simpler times the university oral exam played a larger role in graduate certification than it does today. When the intellectual unity of graduate studies was greater and the degree of specialization less, it is supposed, faculty members from throughout the University might have participated meaningfully in the examination of a candidate in almost any discipline.

In fact there never was such a golden age—at least not at Stanford, as the historical survey by Leonard Berk (Appendix V-4) indicates. Whether or not intellectual unity in graduate studies ever existed, it is difficult to even approximate today. Despite tireless efforts by the Graduate Division Office to match the interests of out-of-department chairmen to examination subjects, it is the exceptional case in which the chairman can participate in an intellectually meaningful way in the oral examination.

In this situation does it make sense for Stanford to retain the university oral requirement for the Ph.D.? We believe that it does, for the student, his department, and the University all derive benefits from the examination that would not be easily obtained by other means.

We believe that the oral examination retains value first as a teaching experience and intellectual encounter for the student; second, as a milestone, a means of internal communication, and a point of contact with the larger University for the department; and third as a small but significant unifying force and means of internal communication within the University. The reasoning behind this belief will emerge in more detail below as we set forth our recommendations for modifying the university oral examination. But first we shall briefly review the existing oral examination policies and the way they are now applied.

Current Practice

The university oral examination is governed at present by the "Rules for Examination for the Ph.D. Degree" adopted by the University Committee on the Graduate Division and approved by the Senate of the Academic Council in 1968.* In general terms the current regulations provide for a university oral examination that includes one or more of the following three elements:

1. *An area examination* in the student's area of special interest, or in his dissertation area broadly construed.
2. An examination of a *dissertation proposal*, with the examination being taken before dissertation research begins or shortly thereafter.
3. A *dissertation defense*, presented after dissertation research is completed or nearly so.

The chairman of the examining committee is appointed by the Graduate Division; he is normally not from the student's department. The remaining members of the examining committee and the general format of the examination are determined by the candidate's own department. Five examiners constitute a quorum. If the candidate is presenting a minor subject, at least one examiner must represent the minor department. Under present policy any member of the Academic Council may attend an examination, participate in the questioning, and participate in the voting. The procedures governing the voting are explained in Appendix V-6.

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* The rules are reproduced as Appendix V-5, along with a sheet of general directions on procedures (Appendix V-6) supplied the chairman of each university oral. Appendix V-7 summarizes the oral examination procedures in use in most departments as of the summer of 1971.

Tabulating current examination practice by department, one finds that just under a quarter of the departments use some kind of area examination or examination on an assigned topic; about the same number use some form of examination on the dissertation proposal; and slightly more than half the departments use the traditional dissertation defense.

Whatever the nature of the university oral examination, a portion of it often takes the form of a "public seminar," i.e., a public lecture by the candidate, followed by a period of private questioning by the examining committee. The public seminar format is used by roughly a quarter of the departments, with the remainder using the conventional private examination. Use of the public seminar appears to have increased in the past few years—a trend the committee applauds. We believe this format is in many cases less intimidating to the candidate, and it makes it possible to turn the examination into an educational experience for students and faculty with interests in the same field.

The university oral examination is viewed as a serious hurdle by many students. Over the past decade, however, more than 95 per cent of those taking the examination passed on the first attempt. Approximately 99 per cent of those initially taking the exam pass eventually. The remaining 1 per cent are predominantly students who never repeat the exam, rather than students who fail repeatedly.

General Recommendations

The committee approves the present variability in the nature and timing of the oral examination, which it believes reflects valid differences in the needs of different departments. We should like, however, to call to the attention of departments not now using the dissertation proposal form of examination the particular advantages of this form. An oral examination on a dissertation proposal typically covers the background relevant to the proposed research problem, the rationale for the proposed investigation, and the strategy and methodology to be employed. We believe that such an examination, held either shortly before the student begins dissertation research or before he is very far advanced, can help bridge what is often an unfortunate gap between the two stages of graduate education, and perhaps even reduce the number of students who complete all the other requirements for a Ph.D. but run aground on the shoals of dissertation research.

We recommend that departments which do not use the dissertation proposal form of university oral examination at least consider the advantages of doing so, and that departments which decide against adopting this type of examination consider adopting in its stead a reasonably formal dissertation proposal, submitted by the student for acceptance by the department. The proposal might include a definition of the research problem, the methodology and goals of the proposed study, and a realistic probable completion date. Such a proposal could help immeasurably in forestalling later misunderstandings.

Proposed Regulations

In this section we shall set forth our proposed new regulations on the university oral examination one by one, following each regulation with a discussion of the reasoning behind it.

> 21. *At some point during each student's Ph.D. candidacy there shall be a university oral examination of the student's scholarly attainments. The procedure governing the examination shall be determined by the department, but the examination must be open to attendance by any member of the Academic Council. The examination, including some indication of its topic, shall be announced in advance in an appropriate University publication.*

This regulation basically codifies present practice. It reaffirms that there should be an examination of the scholarly attainments of every Ph.D. candidate that is open, at least in principal, to the entire University faculty. Despite the effects of specialization and departmentalization, we are idealistic enough to believe that graduate education retains at least a remnant of intellectual unity, and tradition-bound enough to believe that any mechanism which helps preserve that unity and promote wider communication within the University's graduate community deserves encouragement. Further, since the Ph.D. degree is in the end granted by the University as a whole, it seems to us reasonable that the University continue to require at least one formal display of the scholarly attainments of each doctoral candidate.

It may be objected that the dissertation also represents a public demonstration of the candidate's scholarship, and that the university oral examination is therefore superfluous. One answer to this objection is that the dissertation becomes a public document only upon completion of the Ph.D. degree, whereas the university oral examination in many cases occurs earlier in the student's career. A second and perhaps more cogent answer is that if, as the Committee on the Dissertation is proposing, the relative importance of the dissertation in the Ph.D. program is diminished, then it would seem both appropriate and useful to preserve a mechanism which permits a verification of scholarship that is both different and distinct from the dissertation.

Moreover, the university oral examination is at least potentially less parochial in its focus than the dissertation and more closely allied with the teaching function. Whereas the dissertation is presented as evidence of research competence, narrowly focused and addressed to an audience engaged in similar research, the examiners may require the candidate to explain his methodology or the significance of his work in a way that forces him to focus on broader issues. In short, when well administered, the oral may require an act of teaching; and assessment of a candidate's competence as a teacher is a proper concern of a degree-granting institution. Finally, as we shall outline below, the university oral examination should in virtually every instance serve other useful functions within both the department and the broader University community.

We agree that the timing of the university oral should be flexible, at the option of individual departments, but in no case should the examination occur before the student has spent enough time in graduate school—typically two years—to be qualified as a candidate for the Ph.D. The university oral is an examination of what the student has learned and accomplished during his years of graduate study, not of his qualifications to undertake graduate study.

The general format and precise characteristics of the examination should continue to be determined by the individual student's major department, within the guidelines outlined below. The examination can and should serve the needs of the department as well as the University, and within limits the department can shape the examination to its own ends.

> 22. *The chairman of the examining committee for the university oral shall normally be a member of the Academic Council from outside the student's department, appointed by the Dean of Graduate Studies. The chairman shall preside over the examination in accordance with the procedures established by the department, and shall vote in the examination if those procedures so provide. He shall report both the results of the vote and his own assessment of the examination to the Dean of Graduate Studies. A copy of his report shall be sent to the Chairman of the student's department.*

We have said that in a small but significant way the university oral examination promotes communication between the different, often highly specialized departments of the University. We expect that individual departments, in establishing their general examination procedures and in determining the membership of each particular examining committee, will make every effort to include members of other departments who can contribute to the value of the university oral as an examination of scholarly attainment. Similarly we expect that out-of-department chairmen will continue to be chosen largely for their potential intellectual contribution to the examination. We believe, moreover, that the device of the out-of-department chairman will continue to foster serendipitous contacts among members of the faculty who have little prior acquaintance with one another, and thus will help strengthen the intellectual ties that make it possible to describe the University as a community of scholars.

The defenders of the university oral examination believe that it serves an important monitoring function. We share this belief. Oral examinations make the character and quality of department programs visible to faculty members from other departments, a situation of considerable potential benefit to the University as a whole, and to the departments of both examiner and examinee. For the individual student, the outside examiner may serve as both an observer and, to some extent, a buffer in the rare case when a candidate's examination is clouded by intellectual and even political factionalism in his own department. We believe that the continued appointment of outside chairmen will provide a valuable if somewhat haphazard opportunity for at least limited outside scrutiny of a department's academic programs. Our suggestion that the chairman "shall report . . . his own assessment of the examination to the Dean of Graduate Studies" is intended to buttress the monitoring function of the out-of-department chairman, and to indicate that to some extent he will be acting as the Dean's agent. The precise nature of the chairman's report we leave to the Dean to decide.

23. *Each department shall be free to establish procedures, including voting eligibility, for the university oral examination of its own students within the following constraints:*

(a) *There shall be at least four voting members on the examining committee, plus the outside chairman if the department's rules provide that the chairman shall vote, with a majority of the voting members being members of the Academic Council. The examining committee may include suitable persons from outside the University provided that the student to be examined concurs.*

(b) *All members of the Academic Council shall be free to attend the examination. The right of attendance by others, including students, shall be governed by departmental procedures.*

(c) *The examination shall not exceed three hours in duration, of which at least thirty minutes shall be devoted to the student's principal research topic or dissertation.*

(d) *The examination must follow an established departmental policy, which shall be on file with the Graduate Division and avail-*

able to students in advance. The participation of graduate students in the formulation of this policy is strongly urged.

(e) *The outcome of the examination, as determined by secret ballot, shall normally be either pass or a recommendation to repeat the examination after specified conditions are satisfied. A favorable vote by three-quarters of those qualified to vote (or the next lower whole number if three-quarters is not a whole number) shall be necessary for a pass.*

Item (a) of the legislation proposed above contains what is in principal perhaps the most revolutionary change, though in practice an effectively trivial change; we are proposing that members of the Academic Council should continue to be free to *attend* any university oral examination, but should no longer be free to *vote* unless they are eligible within the terms set by the department for that particular examination. The purpose of this proposed change is to preclude a remote but not unimaginable turn of events, namely that a small clique of faculty members might join together to change the outcome of a university oral examination from what it would be if voting privileges were confined to the regularly appointed examining committee. We believe that little purpose is served by the present regulation allowing any member of the Academic Council to vote in any university oral examination he chooses.

If there are legitimate objections among the faculty to the awarding of a particular degree, it would seem both more appropriate and more useful for these objections to be raised either privately or if necessary at the time the degree is recommended to the Academic Council for final approval. Discussion, debate, and if necessary a vote by the Academic Council, would then be possible.

The remaining constraints set forth above are intended to ensure that the examination is of substantial character, that the form of the examination is known to students well in advance, and that a favorable decision by the examining committee represents a reasonable consensus of the committee. We wish particularly to emphasize the desirability of student participation in the formulation of departmental policy on the university oral examination.

TERMINATION PROCEDURES

Throughout this report we have emphasized the importance of letting a student know exactly where he stands at every stage of graduate training. Nowhere is such clarity more important than in the procedures by which a graduate student can be forced to discontinue his education at Stanford. Many members of the faculty can recall a not-so-distant era when professors would informally decide among themselves that a student "didn't have it," his adviser would informally communicate that information to the student, and the student would discreetly disappear. To the joy of some and the despair of others, those days are gone. The adviser may still properly discourage a student from continuing in a given discipline; but the student has been admitted to Stanford by a department, and he is entitled to learn how that department regards his work, to learn the department's reasons for considering his work unsatisfactory, and to respond to those reasons if he wishes. The procedures developed to handle such situations have often been haphazard in the extreme, in many cases amounting to little more than an ad hoc response to the most recent crisis.

To avoid such dismaying situations in the future, the committee is proposing a uniform set of procedures to be followed whenever a department makes a decision that will result in a student's having to leave Stanford. Some may object that a legal framework is inappropriate for what is essentially an academic decision. On the contrary, a legal framework of established procedure is necessary precisely to ensure that the decision is made on academic grounds. No one debates the departments' right to set their own standards, so long as those standards are clear and equitably enforced. Various kinds of procedures can be devised, but it is important that a uniform set of procedures be enacted by the Senate and applied in every department (see Appendix V-8). In the past, reviews of termination decisions by the Dean of Graduate Studies, the Committee on Graduate Studies, or the University Ombudsman have been impeded by inadequate documentation at the department level. Uniform procedures that include adequate documentation of departmental decisions will greatly expedite appeals and reviews. University-wide procedures, moreover, are more likely to be widely known and understood among the graduate students than idiosyncratic departmental procedures. The Committee on Assessment and Reporting therefore recommends that the Senate enact formal termination procedures applicable to all doctoral students at Stanford.

Admission to Candidacy

In our discussion of qualification, we distinguished between the status of a student during his "probationary" period and that of a student who has been admitted to candidacy. This distinction should be reflected in the procedures by which a student's career at Stanford can be terminated. We have recommended that no student be permitted to register for a third year if he has not been admitted to candidacy. The qualification procedure by which the department decides whether or not to admit a student to candidacy thus becomes a possible termination decision. Despite the student's "probationary" status, the decision is one that vitally affects his future career, and he is therefore entitled to have the decision made in accordance with an established, equitable procedure. We are concerned here only with the formal action by the department after the qualification procedure—be it examinations, papers, or a research project—has been completed.

The committee makes the following recommendations:

24. *The Senate should adopt the following procedures for use by departments in determining whether or not to recommend the admission of a student to candidacy, and in other termination proceedings concerning students not yet admitted to candidacy:*

(a) *The responsible departmental committee** *shall review the*

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* In most departments the standing committee on graduate studies will conduct the review described in step (a). If a department does not have such a committee or chooses not to use it, the entire department should simply replace the committee in steps (a), (e), and (f), and step (b) becomes unnecessary.

student's academic record in the department and his performance during the qualification procedure, and then vote. Minutes of the discussion and the vote shall be taken.

(b) *If a committee has conducted this review, its decision must be approved by a majority vote of the department faculty present. Minutes of the departmental review shall be taken.*

(c) *In the event of a negative decision, the DGS*[*] *or the student's adviser shall, if possible, personally communicate the decision to the student and discuss it with him. The student shall also receive written notification of the department's decision, including the reasons for the denial of candidacy, and the appeal procedure.*

(d) *A positive decision need be communicated to the student in writing only.*

(e) *The student shall be given the opportunity to examine his departmental file (including the Minutes of the faculty meetings), and may request reconsideration by the responsible committee, giving his reasons for believing reconsideration is warranted.*

(f) *The committee may refuse to reconsider. The committee's response to the request for reconsideration shall be written, and shall be included in the student's file.*

(g) *After a final negative decision at the department level, the student may appeal in writing to the Dean of Graduate Studies. The Dean shall review the petition, the student's departmental file, and the Minutes of the faculty review. A decision by the Dean affirming the departmental refusal to grant candidacy shall be final.*

Termination of Candidates

We have said of a student admitted to candidacy, i.e., a candidate, that his "position in his department is secure, subject only to continued satisfactory progress toward completion of remaining departmental and University requirements" (Recommendation 15). There will occasionally be cases in which a department wishes to terminate a candidate precisely because he has not made "satisfactory progress" toward the degree—for example, if after a year's work he has made no progress on his dissertation. In such cases the student has been pronounced "qualified" by his department and has a greater investment in his career at Stanford. He is therefore entitled to somewhat more elaborate termination procedures than the non-candidate. In particular, he has the right to hear the entire case against him. The committee fully recognizes that the procedures recommended below are cumbersome and potentially embarrassing. We hope that selective admissions, effective advising, and careful scrutiny of students during the qualification procedure will obviate the necessity for termination so late in a student's career. But for the rare case in which the question of terminating a candidate does arise, the committee makes this recommendation:

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[*] In some departments, the Chairman may wish to act in place of the DGS during termination proceedings.

> 25. *The Senate should adopt the following procedures for use by departments in terminating students already admitted to candidacy:*
>
> (a) *When a student admitted to candidacy does not seem to be making reasonable progress toward the degree, his adviser or the DGS may initiate discussions with the student. These discussions should include the student, his adviser, the DGS, and any other faculty members whose participation is appropriate. Minutes shall be taken.*
>
> (b) *Following these discussions and having requested a written report from each of those involved, the responsible department committee*[*] *may issue a warning to the student. The DGS will notify the student in writing of this action. The written notification shall include a summary of the student's academic deficiencies; the steps necessary to correct these deficiencies; and an explicit statement of the time period—in no case shorter than three months—that will be allowed for their correction.*
>
> (c) *At the end of this warning period, the committee may initiate termination proceedings; may issue a renewed or revised warning; or may allow the warning to lapse without further action. If the warning is allowed to lapse, the committee may not undertake termination proceedings except by issuing a new warning following the above procedures.*
>
> (d) *If at the end of the warning period the committee decides to consider termination, the DGS shall give the student written notification of the impending termination proceedings, including a description of the student's rights during the proceedings.*

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[*] In most departments the standing committee on graduate studies will conduct steps (b)–(f). If a department does not have such a committee or chooses not to use it, the entire department will conduct steps (b)–(f), and step (g) becomes unnecessary.

(e) *The student shall have the right to examine his departmental file; to appear at the meeting to hear the entire case against him; and to present his own case against termination, both orally and in writing. Minutes shall be taken.*

(f) *The committee shall then vote on termination. Minutes shall be taken.*

(g) *Any decision to terminate a student admitted to candidacy must be approved by a majority vote of the department faculty present.*

(h) *The DGS shall notify the student in writing of the department's decision. In the event of a negative decision the DGS shall also include the reasons for termination and the appeal procedure open to the student.*

(i) *The student may appeal to the Dean of Graduate Studies, who shall review the student's file, the Minutes of all relevant meetings, and the documents presented at those meetings.*

(j) *The Dean shall report his recommendations to the Committee on Graduate Studies. If his decision is for termination, the Committee on Graduate Studies—which originally granted candidacy—must concur. Termination of candidacy by the Committee on Graduate Studies is final.*

Renewal of Candidacy

Once granted, candidacy extends for five years. At the end of that period a student may apply for renewal of candidacy. A decision at the departmental level to support the application for renewal of candidacy has in the past been virtually automatic. We have suggested that, to cut everybody's losses, such decisions should become less automatic, but that the rights of the student whose career may be terminated by a decision not to renew must be safeguarded. The committee has recommended (Recommendation 20) that the procedures in such cases be the same as the procedures for terminating candidacy (Recommendation 25). The only difference would be that the termination procedure would be set in motion by the responsible committee's refusal to recommend renewal of candidacy. The termination hearing would then be in the nature of a "reconsideration" by the committee. In such cases the student may well have taken a position elsewhere, and much of the appeal may have to be conducted by mail. The timing of the hearing should take such factors into account, and should provide the student with the greatest possible opportunity to appear before the department and to prepare his case adequately.

Confidentiality

There is one aspect of our proposed regulations for termination proceedings that we realize will concern some members of the Academic Council: namely, our proposed breach in the confidentiality of the student's departmental file. The committee believes that when a student's career is in jeopardy, the members of the department cannot claim confidentiality for their own communications. If they could, the student would have no way of rebutting the charges made against him. So the student to whom the department refuses to grant candidacy, the student whom the department is considering terminating, the student whose candidacy the department refuses to renew—all these have the right to examine their departmental file, that is, all the papers that will be reviewed by the department in deciding on termination. We would allow for a few exceptions: confidential letters written in support of the student's original application for admission must be extracted from the file; other confidential material from sources outside the department may also be removed, but its substance should be summarized for the student in a way that does not reveal the source. It is our considered view, however, that *no* written communications or documents from inside the department should be kept confidential. Some may wish to argue that a student's departmental file should routinely be open to him; we are not prepared to go so far, but when a student's career is in immediate jeopardy, then, surely, he should have access to his file.

We also wish to emphasize that the procedures we have recommended apply only to *academic* termination, i.e., termination for inadequate academic performance. Students may also on occasion be expelled or otherwise disciplined for other reasons, e.g., serious misconduct. Nothing in the procedures suggested here should be interpreted as limiting the University's power to terminate for other reasons through other channels.

RECORD-KEEPING AND REPORTING

One vestige of a bygone era in graduate education has been a remarkably casual, not to say slovenly, approach to record-keeping; at worst, a department is barely able to produce a list of graduate students in residence. Indeed, the Committee on the Future of the Graduate School of Harvard's Faculty of Arts and Sciences recently was forced to concede, after a year and a half of study, "There are some things that nobody knows or can discover." In the many instances when departmental figures for admissions and registrations differed from those provided by the Graduate School for the department in question, the Harvard committee had no recourse but its own devices and "approximations."*

The result of scattershot record-keeping in the present era is that many a department is unable to monitor the progress of its students, the Dean of Graduate Studies is unable to appraise the functioning of the department, and the President of the University is unable to evaluate the operation of the Graduate Division. To rectify this unhappy state of affairs, we shall recommend that certain minimal information be included in the departmental file of every graduate student; that certain statistical information be sent annually to the Dean of Graduate Studies by every department; and that the Dean submit an Annual Report on the Graduate Division to the President of the University.†

The various disciplines differ immensely in the rate of intellectual development they ask of their graduate students, and we have accordingly recommended that in its Program of Graduate Study each department set forth a timetable of the progress its graduate students are expected to make each year, which will help it keep track of students' progress in relation to departmental expectations. The timetable need not be a lockstep: exceptions can be made; departments can set up individual programs; and so forth. But the department must have information on student progress. The lack of such information has allowed students—out of ignorance of departmental expectations, lack of motivation, non-academic pressures, or whatever—to fall far behind in their work while the department remains oblivious to their floundering. That is a waste of everyone's time and resources.

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* Faculty of Arts and Sciences, Harvard University, *Report of the Committee on the Future of the Graduate School*, Robert Lee Wolff, Chairman (March 1969), pp. 3–4.

† Record-keeping for graduate students is discussed further in Appendix V-9.

The Dean of Graduate Studies, for his part, has no need to keep track of individual graduate students, but he has a very pressing need, particularly in the current time of severe financial constraints, to monitor what the departments are doing with the University's money. Does a department have an 80 per cent attrition rate in its graduate program? Does it encourage students to postpone dissertation research until their fifth year of graduate study? Does it grant only a few very large fellowships in order to woo the most promising students away from competing universities? Such practices may be justifiable in the eyes of the department, but the Dean may wish to give its claim on scarce financial resources somewhat lower priority than other graduate programs. The Dean already has access to much of the information he needs in making such decisions, but uniform departmental reporting would give him data in a form more useful both to him and to the department.

26. *The DGS in each department shall send to the Dean of Graduate Studies no later than Registration Day of the Autumn Quarter a list of all graduate students who were pursuing a degree in residence during any part of the previous academic year, listing for each:*

(a) *Year of graduate matriculation at Stanford;*

(b) *Number of years of graduate study at Stanford;*

(c) *Current "status" designation;*

(d) *An indication whether the student's progress has been "satisfactory" or "unsatisfactory" according to the department's timetable;*

(e) *Financial aid (kind and amount) for preceding and current year;*

(f) *Number of years on Stanford fellowship support;*

(g) *Further comments: e.g., degree awarded, reason for dropping out, nature of unsatisfactory progress, probation, etc.;*

(h) *Student's adviser.*

(Students in bona-fide Master's programs should be listed separately from doctoral students.)

27. *The DGS in each department shall send to the Dean of Graduate Studies no later than Registration Day of the Autumn Quarter a list of all candidates for the Ph.D. who were not in residence during the previous academic year, listing for each:*

(a) *Year of graduate matriculation at Stanford;*

(b) *Number of years of graduate study in residence at Stanford;*

(c) *Year of first admission to candidacy;*

(d) *Dissertation adviser;*

(e) *Progress during previous year: none, minimal, satisfactory, good;*

(f) *Estimated date of completion of Ph.D.*

Sections (e) and (f) should be completed on the basis of the adviser's annual report on the student.

The accompanying illustrations show draft forms for these reports to the Dean. We believe the items requested in the forms are self-explanatory, with the exception of the student's "current 'status' designation," mentioned in 26(c) above. This rubric, discussed in Appendix V-9, is intended to distinguish between candidates for different degrees and also between doctoral students who have been admitted to candidacy and those who have not been.

The student's departmental file should, of course, contain additional information. We reiterate here Recommendations 5 and 6 from our discussion of Advising, to which the reader might refer for further discussion.

28. *The departmental file of every graduate student shall contain at least the following:*

(a) *All information transmitted to the Dean under Recommendations 26 and 27;*

(b) *Annual report of the student on his progress and plans (Recommendation 9);*

(c) *Annual report of adviser to student (Recommendation 10);*

(d) *All correspondence between department Chairman or DGS and the student, and all official correspondence between the adviser and the student;*

(e) *Results of examinations and qualification procedure.*

In many universities the Dean of Graduate Studies is required to make an Annual Report to the President, which then becomes

FORM A (resident students)
1971–72
Date: ____________

STANFORD UNIVERSITY
DEAN OF GRADUATE STUDIES

Department: ____________
DGS: ____________

List all students in residence for any part of 1971–72

NAME	Year of Matriculation	Graduate Years Stanford	Status*	FINANCIAL AID Amount and Nature†		No. Years of Univ. Support	PROGRESS Satis. or Unsatis.	Adviser	COMMENT (Probation; Attrition; etc.)
				1971–72	1972–73				

* M-candidates for AM & MS; I-candidates for MFA, Engineer, M.Ed.Admin.; DP-doctoral precandidates; DC-doctoral candidates

† SF-Stanford Fellowship; RA-Research Assistant; TG-Training Grant; N-National Grant; AF-Acting Faculty; D-Residence Staff; L-Loan. Identify source of National Grants: Danforth, NSF, etc.

FORM B (nonresident candidates)
1971–72
Date: ______
List all candidates not in residence in 1971–72

STANFORD UNIVERSITY
DEAN OF GRADUATE STUDIES

Department: ______

DGS: ______

NAME	Year of Matriculation	No. of Years in Residence	Year of Admission-Candidacy	Thesis Adviser	PROGRESS* 1971–72	Estimated Date of Completion	COMMENT

* Under Progress, a simple description is sufficient: NONE, MINIMAL, SATISFACTORY, GOOD, EXCELLENT.

a public university document. This report has a dual function: it triggers the annual collection and appraisal of comprehensive data on graduate education, and it informs the administration and faculty of the state of graduate education. In the course of the Study of Graduate Education at Stanford we learned, for example, that considerable effort is necessary to establish attrition rates or average length of time to the Ph.D. when such data have not been systematically compiled over several years. Of course the Dean's report should go beyond mere statistics; it should include general material on the state of graduate studies, programs developed or dropped during the year, forecasts of future developments in the Graduate Division, and whatever other material the Dean considers relevant.

29. *The Dean of Graduate Studies shall submit to the President of the University an Annual Report on the Graduate Division. The Report will discuss graduate education at Stanford during the previous academic year, and will also treat future developments in graduate education. It should also include the following statistics and some explication of them:*

(a) *Number of students enrolled by department, degree-objective, sex, minority group, nationality, undergraduate school;*

(b) *Number of graduate degrees awarded by department;*

(c) *Length of time to degree during previous year and averaged over previous three years, by department, School, division (Humanities, etc.);*

(d) *Sources of financial aid, and distribution pattern of aid within the University;*

(e) *Attrition patterns among graduate students by department and degree. Data for previous year as well as three-year average should be included.*

The Annual Report shall periodically include a study of the employment of degree recipients. It shall also periodically include a discussion of employment and funding projections in various general areas of graduate education.

Our recommendation is not intended to limit the Dean to the areas mentioned, but rather to indicate what we perceive as the bare essentials. Most of the annual statistics called for can be drawn without great difficulty from the departmental reporting forms we have recommended above, from the Registrar's Office, and the Annual Departmental Reports to the President. For example, departments must give detailed information on placement in their Annual Reports, and the material from the different departments can be brought together by the Dean's Office. The job market has become such a source of despair in some fields that almost any hard data on employment of Stanford Ph.D.'s would be welcome. The Dean's staff is in a far better position than most department Chairmen to assess possible changes in employment and funding patterns. Such assessments require contact with administrators elsewhere, access to government reports, knowledge of proposed legislation affecting graduate aid and research, and the experience to separate short-term crises from long-term trends. A periodic discussion of these issues could be of great assistance to departments in establishing their own admission quotas, priorities, and programs.

We hope that our entire report, particularly our efforts to protect the individual graduate student from arbitrary treatment, bespeaks our awareness that a graduate school exists to educate men and women, and not to generate statistics. But the faculty and the Dean must look beyond individual students. Only comprehensive statistics can spotlight Ph.D. programs that fruitlessly consume what might have been a young scholar's most productive years; only statistics can help us predict future admission, funding, and employment patterns; only statistics can help the Dean identify departments with horrendous attrition rates. Data are dangerous only if we allow them to obscure human concerns: if we award financial aid solely on the basis of GPA, if we allow no deviation from the timetable. Our study has convinced us, however, that abuses stem most often not from too much information, but from too little: ignorance of requirements; misunderstandings; poorly kept files; students "lost" in the program; administrative ignorance of departmental abuses; ignorance of a shrinking job market; dissatisfaction with a program to which the student, if well informed, would never have applied. Thus we return at the end to a note we sounded at the beginning: all twenty-nine recommendations in this report are designed to improve the flow of information—in quantity, quality, and accessibility—between the applicants, students, faculty, and administrators who are involved in graduate education at Stanford University.

Ronald J. Mellor, CHAIRMAN
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CHAPTER VI

The Ph.D. Dissertation and Alternative Degrees

Report of the Topic Committee

THE PROBLEM AND ALTERNATIVE SOLUTIONS

In discussing the role of the dissertation in the Ph.D. program, we realize we are entering an area that involves a close and complex relationship between the individual student and his adviser, a relationship that varies greatly from case to case and discipline to discipline. We intrude on such a relationship at our peril. Nevertheless, it seems to us that there are problems with the dissertation requirement too serious to ignore.

The Problem

Among the causes of dissatisfaction with our present dissertation requirements are the unduly prolonged period over which the thesis in many cases drags, the feeling among many of our students that the writing of a dissertation in their discipline is a pointless exercise, and the significant number of students who abandon their graduate education either at the point when they should be embarking on their dissertation in earnest, or while they are working on it. Note, for example, that in the Humanities, the average graduate student is admitted to Ph.D. candidacy approximately three and a half years after graduate matriculation (see Table 1). Of those who have survived to this point, less than 60 per cent receive their Ph.D. within seven years of graduate matriculation, and less than 80 per cent receive their degree within eleven years.[*] These figures can no more be interpreted as indicators of a successful educational program than could a 20–30 per cent drop-out rate among the undergraduates at Stanford.

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[*] See Figures 1 and 2 and Tables 1 and 2 of Chapter II, as well as Appendix II-2, for more detailed figures.

We do not cite these statistics to support a proposal that the Ph.D. be cheapened so the figures will improve. We cite them, rather, because we think they speak strongly and clearly to the need for reform. They are signs of unfulfilled aspirations, and of a wasteful expenditure of human effort. We believe the figures imply that the goals of many students differ significantly from the ends the Ph.D. is traditionally designed to serve.

For many students, the goal of graduate education can be described as becoming expert in a particular discipline by acquiring:

1. familiarity with basic concepts and knowledge;
2. technical facility with the tools and media of the trade, be they a language (including computer language), sources of information, or equipment;
3. a talent for identifying major problems or breakthrough areas;
4. the maturity to work independently in formulating, analyzing, or solving problems;
5. the ability to communicate ideas in publications and in the classroom.

Expertise in these five areas constitutes what is generally known as scholarship. Beyond this, the Ph.D. degree itself, as certification that the student has indeed acquired such scholarly expertise, has become in general practice a prerequisite for a career in university teaching. The basic argument for the requirement runs something like this: in order to be a good teacher of literature or science, say, one must be able to tell what good literature or science is, and to develop this capacity one must have (a) at least minimal exposure to the forefront of the discipline, i.e., some research experience, and (b) the level of critical intelligence required to write a dissertation.

The dissertation, then, is a crucial component of the doctoral program. The researching and writing of it is the student's supervised apprenticeship in his chosen field, and it gives him

TABLE 1

Time from Matriculation to Candidacy, TGR, Orals, and Degree, and Length of Dissertation, for Stanford Ph.D.'s of 1969–71 in Humanities and Sciences

School and department	No. of Ph.D.'s in 1969–71	Average number of years from graduate matriculation to:								Length of dissertation text in pages[a]	
		Candidacy		TGR		Orals		Ph.D.			
		Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean
Humanities	237	3	3.4	3	4.0	3	4.6	6	6.9	245	265
Asian Languages	4	2	3.9	2	4.9	2	3.9	6	7.1	352	380
Classics	6	2	2.2	2	2.6	3	3.5	4	5.3	180	187
Drama	15	2	4.0	3	5.3	2	8.6	8	9.4	225	235
English	71	3	3.4	3	3.9	3	5.1	6	7.1	245	286
French	14	3	3.7	3	3.7	3	3.8	7	8.8	250	296
German Studies	20	2	3.0	3	3.4	2	3.5	4	6.0	235	268
History	57	2	2.8	3	3.4	2	3.2	6	6.3	275	286
Linguistics	10	2	4.8	5	5.7	5	6.2	5	6.9	190	212
Music	3	3	4.3	3	4.4	5	6.1	8	8.0	290	259
Philosophy	23	3	3.7	3	4.5	3	5.0	4	6.0	155	177
Slavic	3	1	2.1	1	3.0	3	3.8	6	7.5	160	167
Spanish & Portuguese	11	3	4.4	3	4.4	4	5.8	7	7.6	160	296
Social Sciences	183	3	3.5	3	3.7	3	4.5	5	5.8	125	172
Anthropology	22	3	3.1	3	3.3	4	4.9	5	5.9	225	245
Communication	12	2	4.4	3	5.8	3	5.2	4	5.4	125	127
Economics	38	3	3.9	3	3.2	4	5.6	5	6.1	145	196
Political Science	27	2	3.5	3	3.4	3	4.2	6	7.5	285	327
Psychology	68	3	3.1	3	3.6	3	3.8	4	4.5	85	92
Sociology	16	2	3.9	3	4.6	2	4.2	5	6.8	115	165
Physical Sciences	282	3	3.5	3	3.8	4	4.5	4	4.8	115	119
Applied Physics	31	3	3.4	3	3.9	3	4.8	5	5.0	120	122
Biological Sciences	34	3	4.1	3	3.6	4	5.2	5	5.5	125	144
Chemistry	70	3	3.3	3	3.7	4	4.1	4	4.2	115	126
Computer Science	25	2	2.9	3	3.6	4	4.3	4	4.4	165	161
Mathematics	42	3	3.5	4	3.9	4	4.4	4	4.8	85	91
Physics	53	3	3.9	4	4.3	5	5.4	5	5.5	105	117
Statistics	27	2	2.9	3	3.5	2	3.2	4	4.7	95	96

NOTE: Table covers academic years 1968–69, 1969–70, 1970–71.

[a] Excluding bibliographies, charts, tables, etc.

or her the opportunity to demonstrate that scholarly skills have been mastered to the point of successful application. Moreover, the successful completion of a dissertation provides the student with the all-important taste of success. *The problem of diverging goals between graduate education and the dissertation requirement arises when the Ph.D. program interprets literally the demand that the thesis be a major contribution to knowledge based on independently designed and executed research.* This may be a reasonable goal for some students, but it is beyond the reach of many others. For a very large number of graduate students original research is a valid long-term career objective, yet the completion of a *major* research project *at this stage of their lives* is an unreasonable expectation. These students aspire to scholarship as defined by the five criteria listed above, most of them in the expectation of pursuing academic careers, combining teaching and learning, at colleges and universities.

Given both the broad range of the students' interests, goals, and abilities and the limited opportunities for careers in basic research, we think it inappropriate to continue interpreting the Ph.D. (or pretending to interpret it) as the reward for a major, original contribution to knowledge. Our views on this point accord with those of Dr. H. E. Carter of the University of Illinois, Chairman of the National Science Board, as quoted in *Nature*: "The system of producing Ph.D.'s that was imported from Germany a century ago has survived [with] fewer changes than any other segment of the American educational apparatus. . . . Many of our present graduate students do not have the creative capabilities of an outstanding Ph.D. candidate."* Unlike Dr. Carter, however, we do not think that the Ph.D. should be reserved for a few research stars. Instead, graduate education culminating in the Ph.D. should be recognized as a stepping stone toward a teaching career for many students, toward a professional non-academic career (e.g., in engineering) for others, and finally toward careers in basic research for others.

Having acknowledged the lack of fit between the aspirations of our graduate students and the requirements of the Ph.D. programs, we are faced with two possible approaches to a solution: either we can introduce *alternative graduate programs* that eliminate the requirement for a research tour de force, or we can broaden the Ph.D. program, deemphasizing the dissertation and making a more flexible, balanced effort to encourage scholarship as broadly defined above. In the remainder of this section we shall discuss the first approach and why we think it is not right for Stanford; in the second section of this study we discuss how the second approach might work at Stanford and why we think it should be adopted, at least experimentally.

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* "Dr. McElroy Claims His Crown," *Nature*, 227 (August 8, 1970), 545.

Alternative Degree Programs

This topic committee has considered alternative degree programs beyond the Master's level. One such program receiving much attention nationally is the Doctor of Arts (D.A.) degree, aimed specifically at preparing academically well-qualified teaching scholars for college classrooms.* The D.A. is described in the following excerpt from the "Supplemental Statement on the Doctor of Arts Degree" published in 1972 by the Council of Graduate Schools in the United States:

> The primary purpose of the academic component should be to provide broad teaching competence at undergraduate levels. The philosophical objective is to produce broad competence in contrast with research specialization and to exemplify a humanistic approach to human problems and to teaching. The purpose is to provide integration of knowledge for undergraduate teaching, not to specialize and fragment what the teaching scholar knows and learns; . . . hence, wide course selection within the doctoral student's basic discipline and interdepartmental and interdisciplinary study are desirable. Formal graduate course work should prepare the prospective teaching scholar for other broad teaching responsibilities. A major part of all course work must be explicitly graduate in level and quality.
>
> Course selection should thus be typically broader and less narrowly specialized than for the Ph.D. and may bridge several supportive disciplines. . . . The degree program should strengthen the teacher's abil-

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* A D.A. degree is currently offered by several departments at fifteen institutions, in the advanced planning stage at eleven more, and under consideration at sixty others. (These statistics are from a November 1971 survey by Dean Robert Koenker of the Graduate School, Ball State University, Muncie, Indiana.)

> ity to integrate and synthesize, to compare data and information, and to apply knowledge; discovery of new data and new "truth" is not the aim.

The Council further states that teaching experience is the *sine qua non* of a D.A. program, and that

> The Doctor of Arts degree must provide for the development of research skills so that the teaching scholar can maintain the quality of his own scholarship and can utilize the results of research in the classroom. However, required research may have a different focus and intensity than for the Ph.D., which frequently points toward a dissertation and toward the later discovery of new knowledge by the research specialist.
>
> . . . The formal research dissertation or project may take several acceptable forms. The evaluation and synthesis of academic or disciplinary knowledge, comparative studies, creative intellectual projects, expository dissertations, or significant research in teaching problems and the organization of new concepts of course work are applicable. The evaluation and synthesis of materials and academic content that may be potentially valuable in college teaching but which have not yet been reviewed is also acceptable. Such research or independent investigation should be closely related to academic subject matter and demonstrate the scholar's mastery of *academic content and research skills* as attributes of effective teaching.

Although we recognize the validity of these goals, we have decided against recommending such an alternative degree program as a course for Stanford. Our main reasons for this decision are as follows:

1. A college-level teacher needs the experience of research in order to work critically with the materials of his discipline. The Master's degree already exists to recognize scholarly attainments beyond the undergraduate level. We see no virtue in duplicating the Master's program at a slightly more advanced level.

2. The existence of two different doctoral programs probably would require a student to decide early in his graduate career whether his primary lifetime commitment was to college teaching or to independent research. We believe such early tracking to be highly undesirable.

3. The leading universities will not appoint to their faculties

young scholars who have not demonstrated their capacity to work on the frontiers of their discipline and so to train graduate students for such work. Insofar as degrees count, they will demand the Ph.D. Students who opt for a "teaching degree," whether it requires a thesis of a purely expository character or no thesis at all, are opting for a degree that will bar them from the better universities and that will therefore inevitably be regarded as second-class.

4. A major commitment on the part of the faculty would be required if Stanford were to offer a meaningful alternative program to the Ph.D. If the research dissertation were dropped altogether, a program of real value would require the addition of a comparable effort on the teaching side. We do not think the Stanford faculty has either the manpower or the interest to develop such a program.

The same line of reasoning has been pursued in a recent position paper on the D.A. degree by the Association of American Colleges, a group composed primarily of private liberal arts colleges.[*] The Association's paper urges that efforts to improve the preparation of college teachers be concentrated on changing existing Ph.D. programs, particularly toward greater flexibility in the dissertation requirement. The Association argues that the D.A. degree will inevitably be considered a second-class degree, and that given this fact, and the fact that the current oversupply of Ph.D.'s is likely to persist for the foreseeable future, mere D.A.'s will have a very rough time indeed finding teaching positions in colleges or universities.

For those students interested in training beyond the Bachelor's degree but not to the level of scholarship appropriate to the Ph.D., we believe that Stanford should strengthen the quality of its Master's programs. The Master's is an existing, well-established degree that fills the gap between the Bachelor's degree and the Ph.D. Moreover, there is a general understanding among institutions and prospective employers concerning what the Master's degree qualifies a student to do. (Alternative educational programs aimed at specific and for the most part newly emphasized needs and occupational opportunities—part-time studies, interdisciplinary programs, etc.—are discussed in Chapter IX.)

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[*] The paper was drafted by a study committee chaired by President Theodore Lockwood of Trinity College (Hartford).

In short, we believe that the Ph.D. program is here to stay, and that the world of learning, the University, and the graduate students of the future will all be better served by modifications toward a balanced and realistic Ph.D. program than by the costly adoption of an alternative program that will inevitably be regarded as the preserve of second-raters. It is our recommendation that the Ph.D. continue to be the only doctoral degree offered by the Graduate Division. We recommend further, however, that the Ph.D. program be modified to fulfill the aspirations to scholarship of the majority of our students, and that toward this goal the dissertation should be regarded not as an end in itself, but as an integral part of graduate education.

TOWARD A SOLUTION

Even as the Ph.D. program is now constituted, the relative emphasis placed on the dissertation varies greatly with the individual student's field, interests, career goals, and research luck. This variation should be acknowledged and encouraged. Some students can and should aspire [illegible] the traditional ideal, the dissertation that is the crowning glory and *raison d'être* of a graduate education and a major contribution to knowledge. Normally, however, we believe the student should aim at a three- to four-year program balancing scholarship, the ability to communicate information, and the research experience of an original dissertation. This would make it possible, as it is not at present, for most students to complete the program they begin in a reasonable time, and to find the level of work they like and can do without laboring under an impossible and inappropriate burden.

The Dissertation

Toward our goal of a Ph.D. program that achieves a better balance between the intensive research experience of the dissertation and the development of scholarship in one integrated program, we have two specific recommendations:

1. *Starting in the first year of graduate study, there should be a gradually but steadily growing involvement of the student with his research adviser or advisers in planning and executing original research.*

The applicability of this recommendation varies considerably from department to department and from case to case. In too many cases research for the dissertation is something tacked on at the end of a graduate program, to be undertaken from a standing start, in splendid isolation, after the student has completed all course work and hurdled all examination obstacles. In the Graduate Program in Humanities, by contrast, the student is required to work up and defend two syllabi by the time of his or her orals, one for a course and one for a dissertation. In the Physical Sciences, it is common practice for the first- or second-year graduate student to carry out an original research exercise, working on a well-defined problem posed by his adviser. This allows him to develop his independence, and to learn what it means to "do research" in his discipline. It also makes it possible for the vital bonds of compatibility and respect to develop between adviser and advisee, and in the absence of such bonds, for the two to terminate their relationship before it brings them both greater grief.

2. *It should be explicitly recognized that the fundamental goals of the dissertation project—i.e., to serve as the student's supervised apprenticeship in his chosen field, to allow him to demonstrate his mastery of the tools of the trade, and to give him a taste of scholarly accomplishment—can all be fulfilled even if the dissertation does not meet the traditional ideal of being a major contribution to knowledge based on independently designed and executed research.* THE SCOPE OF THE DISSERTATION PROJECT SHOULD BE COMPATIBLE WITH AN EXPECTATION OF COMPLETION IN A YEAR OR A YEAR AND A HALF OF INTENSE EFFORT, AND IN LESS TIME FOR THE EXCEPTIONALLY LUCKY OR TALENTED STUDENT.

In the fields of Science and Engineering in particular, it is often the case that a student's dissertation, far from being an independently designed and executed project, grows out of a collaborative project in which the student works alongside other graduate students, postdoctoral fellows, and possibly his research adviser. Some research exercises are developed as joint thesis projects for several students, whose theses complement one another. In another departure from the traditional ideal, the dissertation is commonly much shorter and much narrower in scope than the average dissertation in the Humanities and Social Sciences, in many cases approximating a journal article rather than a book. In these fields no one supposes that the Ph.D. represents more than scholarly research potential and a certain level of demonstrated competence.

> 3. *We recommend that every department prepare its own description of a model dissertation project, submit it to the Committee on Graduate Studies, and include it in the Departmental Program of Graduate Study recommended elsewhere in this report, as a guide to incoming graduate students.*

To lend concreteness to our proposals, we list below some examples of model dissertation projects in various disciplines. They are not intended as templates to be rigidly adhered to, but as illustrations of what we have in mind and how it departs from present practice.

1. PSYCHOLOGY. In Psychology we envisage a dissertation that in scope approximates a journal article in one of the major journals in the student's field. Such an article would probably include the results of from one to six related experiments. The dissertation would probably include more historical material and extended interpretation than an article for a professional journal, and data analyses would probably be more complete. It is difficult to be precise about the time scale, since in many cases the student will have been thinking about the problem, doing general reading, and perhaps carrying out related experiments almost from his first days in graduate school. But we would think that from the time of the clear identification of the problem, an outstanding student could complete the dissertation in six months, the average student probably in a year.

2. ENGLISH / AMERICAN AND FOREIGN LITERATURE. We envisage a dissertation that consists of the outline of a book, carefully organized and well-defended on theoretical grounds,

together with a justification of the critical methodology to be used. In addition, at least three chapters of the book, perhaps those most suitable for immediate publication as articles in a scholarly journal, would be presented in final written form. Normally, one of these chapters would include a general analysis of the problem or topic the book is exploring, the critical method used, the range of material to be covered, a justification of the significance or value of the problem—i.e., a preface, introduction, or defense of the project as a whole.

3. STATISTICS. The dissertation typically formulates a problem and offers a solution (or, when called for, several solutions); one or more theoretical publishable papers might result from the dissertation. Occasionally the completed dissertation is literally two or three (possibly unrelated) papers published in any of the two or three leading journals. The element of theoretical advance is, in any case, central to the dissertation. The project for a typical student should occupy three to five quarters; for the very best students, two quarters will sometimes suffice.

4. HISTORY. To point up the contrast between the traditional dissertation and what we are recommending for the future, we offer two contrasting pairs:

Ancient: A dissertation on the U.S. presidential campaign of 1904. A narrative study, commencing with early public discussion of possible candidates and issues and ending with the election, based on detailed study of newspaper stories for over two years, the private papers of all important contenders, party archives, records of conventions, etc. Total research time: five years. Total length of thesis: ca. 1,000 pages.

Modern: The Republican Party Convention of 1904: An Analysis of the Politics of Candidacy and Party Strategy. The thesis stands as a conceptual whole and becomes Chapter V of the author's forthcoming book on the presidential race of 1904. Research time: eight months. Length of thesis: 185 pages.

Ancient: The Russian Land Commune from the Emancipation of the Serfs to Collectivization (1861–1930). A study of the structure and functioning of the commune in the last stage of its existence as a central institution in the rural economy and social organization. Focus of original contribution is on the period of revolution, civil war, and NEP (i.e., 1917–29), during which period the commune had a strong revival, absorbing expropriated lands. The study of the earlier period is largely derivative, but germane. Research time: three years. Length of thesis: 600 pages.

Modern: The Russian Land Commune from the Revolution to Collectivization in the Black Soil Region. Narrower in scope chronologically and geographically, but able to stand as an independent study. Will provide a regional basis of comparison for the forthcoming global study. Demonstrates mastery of the techniques and concepts necessary for doing the global, publishable study. Research time: one year. Length of thesis: 200 pages.

5. ELECTRICAL ENGINEERING AND EXPERIMENTAL PHYSICS. Most dissertations in these fields have been and probably can continue to be more or less novel and original contributions to knowledge. The unit measure of this contribution is usually one or more technical journal articles. This contribution is most often in the nature of another brick in an intellectual structure, well supported and even surrounded by other bricks laid by other workers. Where a dissertation lays the foundation of a new structure, it is often through the working out or demonstrating of an idea originated for the student by a faculty member. In general, dissertations are marked by close intellectual and technical collaboration between student and faculty supervisor, and joint authorship of the resulting technical articles is common.

A dissertation involving experimental work is likely to require two to three calendar years of elapsed time. This is not incompatible, however, with the objective of a four-year Ph.D. program, since it is usually both possible and desirable for a student early in the second year of graduate school and while still continuing course work to begin apprentice work in a research group, learning a particular field of specialization, its research techniques and standards, and the background literature in a problem, before he attacks an individual problem. Also, full-time summer research is usually both possible and expected.

This initial period of familiarization probably takes something like a year of *elapsed* time, almost irrespective of whether the student is working part-time or full-time on these objectives during the year. Similarly, in an experimental project it will typically require a year's elapsed time to get the apparatus operating properly. Once the apparatus is operative, however, or the problem is clearly formulated and attacked, the obtaining and writing up of results can often be a fairly brief process (e.g., the final year in a four-year sequence).

We emphasize again: our goal in setting forth these models is neither more nor cheaper Ph.D.'s, but a doctoral program that is more responsive to changing student goals and opportunities and at the same time less wasteful of the University's increasingly strained resources. So far we have discussed our proposals largely in terms of their advantages to students, but there is also a major advantage to the University in the scheme we have presented: shortening the mean time to the Ph.D. would result in savings of fellowship money and of faculty time and energy. The resources thus saved would then be available for a select group of outstanding Ph.D.'s, working on the most promising projects, in the postdoctoral program described below. Ph.D.'s awarded at the level recommended in this report would not, in and of themselves, discriminate between the outstanding students, destined for the faculties of major universities, and the others. That discrimination would depend, *as it does now*, on the student's promise, as reflected in his professors' appraisals of him, his early papers, and the *quality* of his dissertation. If the postdoctoral program we propose were adopted, it would also depend on whether the student was brought back for postdoctoral work and what he accomplished in his postdoctoral years.

The Postdoctoral Fellowship

Implicit in our proposal to reduce the duration of graduate education and the scope of the typical Ph.D. dissertation is a program of postdoctoral fellowships.

4. *We recommend that a program of postdoctoral fellowships be adopted on a trial basis by departments in the Humanities who find the idea attractive.*[*]

Such fellowships are already available in the Physical Sciences, which make extensive use of research associates and postdoctoral fellows. They have also been widely introduced in the Social Sciences in recent years. During the postdoctoral training period, which usually lasts two to four years, the young scientist has an opportunity to develop and display his talents, thus laying the groundwork for his future career while being given adequate support. We have recommended that a similar program be instituted on a trial basis in the Humanities because it is there that funds are most severely lacking and that the needs and opportunities are greatest. We see several potential benefits in such a program.

First, it would allow those students who wish to continue a research career to eventually have the opportunity for the training and intensive research experience that may result in a major piece of research. Second, it would allow that commitment to be made at a fairly advanced stage of graduate training when the student is in a better position to decide whether a career in basic research accords with his interests and abilities. Third, it would enable the University to certify with the Ph.D. those other students who wish to devote their primary career to teaching, but who have demonstrated research ability and scholarship as defined at the beginning of this report. Fourth, it would enable the University or department to recognize the existence of at least two types of graduate students.

Finally, it would help us in placing our outstanding Ph.D.'s—in these times, an advantage not to be taken lightly. It seems likely that the prestige associated with such a fellowship, its demonstration of the University's faith in the student's future contributions to scholarship, and the opportunity it provides for a young scholar to engage in research during his tenure as Assistant Professor will all combine to make the recipient more attractive to potential employers.

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[*] This program has been funded on a three-year trial basis by the Innovation Fund of the University, with matching funds from the Dean of Graduate Studies. Funds are available to support approximately four such postdoctoral fellowships per year for three years.

The following is offered as a tentative description of the proposed postdoctoral program:

Eligibility. Students shall be eligible for postdoctoral fellowships who complete the Ph.D. at Stanford in less than four calendar years after they begin graduate study at Stanford (leaves of absence and other such circumstances shall be taken into account, but in no case shall the student have received financial aid for more than three years while registered at Stanford). The student shall have demonstrated outstanding ability and potential as a research scholar in his field and shall present a plan of study and research to be carried out during his tenure as a postdoctoral fellow. A student would apply for and be awarded the fellowship during the middle of his third year of graduate study at Stanford, which probably means that he and the department believe he will finish by the end of that year. If he does not finish, presumably he would lose the fellowship, although it seems desirable to leave a little leeway here; for example, if a student takes a job at the end of his third year and finishes his dissertation during his first year on the job, it seems reasonable to regard him as having met the spirit of the eligibility requirements.

Any Ph.D. student from Stanford fulfilling the above requirements shall be eligible to apply for these fellowships. Departments may nominate students at the rate of one nomination for every two eligible students to whom they grant the Ph.D. Departmental nominations shall be weighted heavily in the awarding of the fellowships.

Tenure and Stipend. The tenure of the fellowship shall ordinarily be one year, although longer or shorter appointments may occasionally be made. The fellowship shall normally be awarded for the year two years following the awarding of the Ph.D., but in no case shall it be sooner than one year following the receipt of the Ph.D. Stipend plus reasonable travel expenses shall be comparable to similar existing fellowships offered by the National Endowment for the Humanities and National Science Foundation.

Several points in the above description should be clarified. First, the two-year delay is suggested for several reasons. (1) It would give the student time to reflect on his dissertation, and to prepare himself for writing the important work that we hope will emerge from the fellowship. (2) It will often be the case, especially for the student who goes to a university that is committed to research, that a half-year sabbatical will be offered at the end of two or three years as an assistant professor at that institution. This certainly would be true at Stanford, for example. That half-year sabbatical, combined with a postdoctoral fellowship, will enable the young scholar to spend a year fully devoted to intensive research. (3) The delay assures us that postdoctoral fellowships would not be used simply to support students the department is unable to place.

Second, we wish to make it clear that the student need not return to Stanford for the tenure of his postdoctoral fellowship, although he would be welcome to do so. Postdoctoral research in the Humanities would often be best carried out elsewhere, at libraries and archives with special collections of original documents and rare materials.

To sum up, we see the following benefits in such a program:

1. It affirms the existence of two different careers for the Ph.D. in the Humanities.
2. It makes more reasonable the attempt to shorten the time to the Ph.D. for all students in the Humanities.
3. It makes graduate study in the Humanities at Stanford more attractive to potential applicants, and offers the Humanities a more appropriate status in the world of postdoctoral research.
4. It will allow outstanding young scholars a completely free year to work on a major piece of scholarship.
5. It will help in the placement of our outstanding students.

We gather from preliminary discussions with faculty and students in the Humanities that some departments would welcome such a plan and others would not. Happily, there is nothing coercive in the proposal. Individual departments or students can utilize it as they see fit. It is interesting to note that the faculty of at least one department we talked to has already in effect adopted such a plan. Recently a graduate student was offered an opportunity for a year's postdoctoral study in England. The department felt that the opportunity was so outstanding and the student's scholarly potential so great, that they pushed him through to the Ph.D. in two years so he could take up the postdoctoral fellowship.

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CHAPTER VII

Graduate Student Teaching

Report of the Topic Committee

The Committee on Graduate Student Teaching presents herewith a series of recommendations intended to encourage an increased emphasis on supervised teaching experience as a normal part of academic training for the Ph.D. degree. Before setting forth these recommendations, we wish to take up two kinds of introductory considerations. First, we shall report on recent experience and innovations at Stanford. Second, we shall comment briefly on the relations we believe should exist between teaching and research.

GRADUATE STUDENT TEACHING

Until recently, in the majority of Ph.D. programs in the United States teaching experience has been minimal, and has been coupled to financial support for graduate students. Doubtless there have been at all times individual faculty members who sought to develop the teaching skills of graduate students, but that was not the usual case. Typically, those graduate students who acquired teaching experience did so incidentally, as a result of departmental needs for Teaching Assistants in laboratories, discussion meetings and introductory courses. Their number varied in accordance with the pressure of these needs and the capacity of the department to pay for the services rendered. If a student learned to teach well, it was largely through his own efforts, guided in the main by some attempt to emulate the teachers he knew and admired.

In 1966, two professors of education at the University of Michigan visited twenty universities, including Stanford, and interviewed 105 faculty members involved in training graduate students as teachers. These universities and faculty members were selected because the quality of the training they provided graduate students engaged in teaching was considered unusually high. The two researchers, Koen and Ericksen, concluded in part:

> The modal pattern of training activities consists of brief introductory meetings of all new teaching assistants, followed by individual supervision by faculty members and weekly meetings (largely administrative in nature) of all course instructors. "Individual supervision" more often takes the form of fortuitous conversations than of regularly scheduled meetings. One or more visits by the supervisor to the assistant's class is reported in approximately 40 per cent of the cases. . . .
>
> The evaluation of training programs and teaching assistant performance is usually based on global, impressionistic opinions of faculty members. There appear to be few systematic attempts to develop more objective criteria for such evaluation.
>
> . . . In most departments, teaching assistantships are seen primarily as a means of providing instruction [for undergraduates] and financial support for graduate students, rather than the explicit training of prospective college teachers. Most departments seem not to see the latter task as a major responsibility.*

The report is a fair, if not unduly favorable, description of most departments at Stanford as of 1966. Here, courses like Engineering 296a and German 302, and plans like the special teaching seminar in Electrical Engineering were and still are the exception, owing their existence mainly to the tactful perseverance of one faculty member. (See Appendix VII-1.)

In 1968, the Steering Committee of SES sent a memorandum to all Ph.D.-granting departments, asking, among other questions: "Should Ph.D. candidates be required to do some intensive supervised teaching as a regular part of their graduate programs?" The responses from the Schools of Engineering and Earth Sciences, as well as the Department of Physics, were preponderantly negative. All the other departments in Humanities and Sciences, as well as the Schools of Business and Education, answered affirmatively; some answers underlined the need for supervision of students' teaching.*

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* Frank Koen and Stanford C. Ericksen, *An Analysis of the Specific Features Which Characterize the More Successful Programs for the Recruitment and Training of College Teachers* (Ann Arbor: University of Michigan Center for Research on Learning and Teaching, 1967), pp. 49–50.

The Steering Committee's report concluded that "many graduate students could profit from some experience as apprentice teachers *if* their work is closely supervised, *if* they are given responsibilities commensurate with their skill and interests, *if* they encounter a variety of teaching situations, and *if* they do some advising in conjunction with the teaching experience." The Steering Committee further recommended: "The University should provide and operate videotape equipment for use of any University graduate student teacher who wishes to employ it to improve his teaching performance."†

In February 1969, the provost appointed a committee, chaired by John D. Baldeschwieler, to study the Teaching Assistantship at Stanford. The report of the Baldeschwieler committee, completed two months later, approached the matter primarily from the standpoint of management, notably the duties assigned to Teaching Assistants, and their rate of pay. The committee's summary of its recommendation on these questions is reproduced in Appendix VII-2. The committee also adopted general recommendations, from which we excerpt the following:

> Although at first the problem of increasing the satisfaction and morale of TA's appears to be directly related to the amount of compensation they receive, this solution to the problem is probably only superficial. . . . Fundamental solutions to alleviating dissatisfaction among TA's will be found when the teaching experience of graduate students is personally and professionally satisfying and useful. . . . The two greatest obstacles to achieving this goal are at the department level: first, the inadequate organization to administer programs; and second, the lack of real concern for the TA, whether through lack of interest or divided faculty attention. . . .
>
> Two additional points are worth mentioning: first, departments

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* *The Study of Education at Stanford*, VII, *Graduate Education*, 29, 32.

† *Ibid.*, p. 13.

> have differing needs and strengths which would not be adequately reflected in a single universal policy. Second, TA attitudes are substantially influenced by the faculty around them. Where TA's perceive a general faculty attitude not supportive of teaching, their interest in teaching is likely to suffer. . . .
>
> The initiation of departmental TA training programs should be encouraged. . . .
>
> A clear requirement of departmental training programs is that all teaching assistants receive some consultation and supervision from experienced faculty members. Departments should also assist and encourage their TA's in securing helpful feedback from students.*

The reports just quoted reflect widespread faculty opinion. To improve the effectiveness and value of graduate student teaching, courses in teaching methods and pedagogy can be helpful, especially if they are coordinated with practice teaching. What is chiefly wanted, however, is regular assistance and evaluation by the same faculty members who are supervising the graduate students' research training.

Before the policy recommendations of SES and the Baldeschwieler committee were made, several departments had established requirements that all Ph.D. candidates have some teaching experience. Other departments were proceeding to establish such requirements while the committees were formulating their recommendations. One effect of these requirements has been to equalize, in some degree, both the work and the opportunity for graduate students. Another effect is that it has seemed more and more natural for faculty members principally in charge of Ph.D. candidates' other training to manifest strong interest in their teaching. Many faculty members believe that in an academic community, professional intellectual work ought to be done cooperatively and examined critically.

This last point is the one on which we would place the greatest emphasis. Requirements can easily lead to merely procedural activity, void of seriousness and met by complaisance. Doubtless, requirements are often a convenient way of initiating a change in a previously customary routine. But the factor that will sustain the teaching experience as an important aspect of graduate training is a definite and significant relation between that experience and the expectations and aspirations of faculty members.

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* "The Teaching Assistantship at Stanford: A Report and Recommendations," pp. 13–14, 16.

In the winter and spring of 1971, a teacher-training program was begun in Mathematics, with the participation of thirty graduate students and under the supervision of Karel deLeeuw. Their main conclusion is that if a Teaching Assistant sees that his or her department is "deeply concerned with teaching, and especially if faculty members whom he respects as mathematicians *and* teachers share in the teaching of elementary courses, then it is quite likely that he will view his teaching assignment as a challenging and rewarding one and a significant part of his own education." (The text of their report appears as Appendix VII-3.)

Many exhortations and a few exemplary efforts have appeared at Stanford in recent years. Yet it would be erroneous to describe the present situation as satisfactory. Plainly, many graduate students desire more and better opportunities to teach while in graduate school than they see available to them. In the spring of 1970, a lengthy questionnaire was distributed to about one-fifth of the students then enrolled in Ph.D. programs. A substantial majority of these students returned the questionnaire. The responses, which were analyzed by Roy Childs, Staff Director of SGES, provide some illuminating data.

In each group of academic disciplines (Humanities, Social Sciences, Physical Sciences), only a minority of Ph.D. students expressed a preference for professional careers that would include no teaching. The highest proportion was in Engineering: 43 per cent. Nowhere else did the proportion exceed 33 per cent.

In two departments, Psychology and Biological Sciences, about 60 per cent of the respondents described their teaching opportunities as adequate both quantitatively and qualitatively. In every other department, only a minority said that their teaching opportunities were adequate in both respects. The majority of all respondents viewed their teaching opportunities in graduate school as either inadequate or nonexistent. This was gen-

TABLE 1

Adequacy of Teaching Opportunities

School	Respondents who regarded teaching opportunities in graduate school as adequate: All respondents	N	Respondents interested in teaching careers	N
Physical Sciences	45%	92	44%	72
Social Sciences	34	87	36	69
Humanities	33	41	34	38
Medicine	17	42	15	34
Engineering	16	193	11	118
Earth Sciences	13	31	14	22
Business	8	13	11	9
Education	5	38	8	25

erally as true of those who preferred not to teach after graduate school as it was of those who looked forward to some teaching. The most unsatisfactory situations were in Business and Education; there the graduate students' view of their teaching opportunities as inadequate was nearly unanimous, irrespective of career preferences. (These data are summarized in Table 1.)

The existence of a teaching requirement had a measurable effect on the apparent adequacy of a department's teaching opportunities. In the Humanities and Sciences departments that required teaching experience, 47 per cent of the students responding regarded their teaching opportunities as adequate; in the departments without such a requirement at the time of the questionnaire, 21 per cent regarded their teaching opportunities as adequate.

The state of affairs described by Koen and Ericksen in 1966, implicitly criticized by SES in 1968 and the Baldeschwieler committee in 1969, and regarded as unsatisfactory by many graduate students in 1970, is historically explicable, but obsolescent.

Teaching experience is desired by most Ph.D. students, and is coming to be provided and even required for them. In terms of social needs, this is a fortunate development. It has been estimated that new faculty members with Ph.D. degrees will be needed at an annual rate of 8,000 or 9,000 nationwide through the 1970's; and after a decline to zero in the 1980's, the need will reappear in the 1990's at an annual rate of several thousand nationwide.* Potential teachers should be offered opportunities to discover a vocation for teaching, and to gain the experience that will make them better teachers than they might otherwise be. The quantitative inadequacy of teaching opportunities for graduate students has been, and still is, aggravated by the qualitative inadequacy of faculty assistance and evaluation. This inadequacy results from organizational problems, dispersal of effort, and lack of communication between faculty members. It also results from a persistent vagueness about the purpose of the graduate students' teaching experience.

TEACHING AND RESEARCH

Teaching and research are often seen as competing professional responsibilities, although each ultimately involves communication with other persons. The impression of competition arises from two circumstances. First, it is often true that the presumed audiences for teaching and for research are very different. Second, and more important, competing structures of economic and social rewards have been built up, and they tend to reward skill in research more promptly and more fully than effectiveness in teaching, and sometimes even penalize a person who attempts to do well in both.

There is no intellectual principle dictating that research and teaching be mutually exclusive rather than complementary activities. It may even be true that they call for the same kinds of abilities, and that on the whole the most effective teachers are also the most effective researchers. But on this question there is at present no consensus. The most recent investigation refers to the conflicting results of earlier studies, and itself ends on an inconclusive note: "If one takes department heads' judgments at face value, there is evidence of a strong positive relation between research ability and teaching quality. If, on the other hand, one interprets the correlation in the department heads' judgments as 'halo' effect, then there is no evidence . . . that research activity and teaching ability are related."* For the time being, it seems prudent to regard effectiveness in research and effectiveness in teaching as distinct attainments, in the sense that training in one will not automatically result in success in the other.

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* Allan M. Cartter, "Scientific Manpower for 1970–1985," *Science*, 172 (April 9, 1971), 134.

Research and communication are interdependent in more than one way. As aspects of the life of the learned professions, they merit a more extensive and refined analysis than we can offer here. But a crude effort to classify types of communication is indispensable to our attempt to define the place of teaching in graduate education. We find it useful to distinguish four kinds of professional communication:

1. Communication so essential to research that if communication between co-workers ceases (in a laboratory, for example), then their research also ceases.
2. Communication within a community of specialists, which is helpful or even necessary in enabling each of them to keep up with the field.
3. Communication from a learned man or woman to an outsider, to a person who is, in relation to a particular field of knowledge, a layman.
4. Communication that introduces newcomers to a learned discipline and helps train some of them as successors to the current practitioners. This is the only kind of professional communication that is ordinarily referred to as "teaching."

With respect to this classification, we wish to make two observations. In general, it is best for a person trained for a learned profession to be able to participate fully in the life of that profession, and this involves sharing in all four kinds of communication. It is regrettable when professional training has an isolating effect. In the extreme case, a researcher who has lost contact with laymen in thinking about his subject, and is unable to convey the substance or significance of his findings to them, is to that degree cut off from social contacts and deprived of social utility.

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* John R. Hays, "Research, Teaching, and Faculty Fate," *Science*, 172 (April 16, 1971), 227–30, reporting on an investigation at Carnegie-Mellon University, where the author was Acting Dean of the College of Humanities and Social Sciences.

Finally, we wish also to note the transferability of communication skills from one type of communication to another. In particular, the third and fourth types identified above are comparable. They have in common the fact that the specialized professional does not address peers (and hence cannot draw on their shared technical language and experience), but non-specialists who are incompletely or differently trained.

RECOMMENDATIONS

The basic recommendation of the committee is as follows:

> 1. *The training of a student in a doctoral program shall normally include experience in teaching, supervised by a faculty member and evaluated by the student and the faculty member in consultation.*

We use the word "normally" with the intention of defining as exceptional those graduate students who receive the Ph.D. never having had any experience in teaching. This is a realistic norm for three-fourths of the doctoral programs at Stanford, and for many students in the remaining programs. Each department should be responsible for offering teaching opportunities to all the graduate students who have been admitted to Ph.D. candidacy and who desire teaching experience. Each department should make an explicit decision to impose or refrain from imposing a teaching requirement for all its students.

We have in mind a broad definition of "teaching." The primary element is that the person teaching knows a good deal more about the subject than most of the audience, and that the difference in knowledge is such that the person teaching is obliged to do a considerable amount of translation of his or her specialized knowledge for the benefit of the audience. Our definition includes many instances of the third type of communication identified above, namely, instances of reasonably deliberate, systematic, and extensive communication of knowledge to a lay audience. Our definition excludes professional communications addressed mainly to peers in the same discipline or a closely related discipline. Although we believe that the reading of papers to learned societies, dissertation defenses, and seminars in which third- and fourth-year graduate students report to one another on their research are all important forms of scholarly communication, we do not want to ignore the differences between them and teaching.

A second element in our definition of teaching is the exercise of initiative and responsibility. For those students who intend to teach, the training should be progressive: just as the research component of the graduate training program progresses from basic techniques to more sophisticated techniques and independent design, so also should the teaching component develop as the student learns basic skills and develops confidence. Keeping a Teaching Assistant in a structured position where his duties are clearly prescribed for him for more than a few months cannot be defended as either education or training. Among other things, such a static role for the student "assistant" implies he is learning nothing from his experience.

We list here, approximately in order of increasing independence, the various types of teaching a graduate student might be called upon to do:

1. Grading problem sets and examinations. This is a chore that has to be done, and it is reasonable to *hire* graduate students to help with the task. Such assistance, however, should not be taken as fulfilling a teaching requirement. On the other hand, participation in the design of examinations and research problems may properly be considered worthwhile aspects of teacher training if carried out under faculty supervision.

2. Tutoring. This is a useful experience and good preparation for teaching groups of students. Its value to the tutor depends largely on the responses and questions of the person being tutored, since one learns how to explain things clearly by trying to explain them clearly.

3. Conducting discussion sections, laboratory groups, and elementary language and mathematics classes. Here there is a wide range of possibilities. Custodial care of laboratory facilities is not the sort of experience that helps a graduate student dis-

cover a vocation for teaching. Strict conformity to another person's lesson-plan is likewise not teaching in the full sense, but service as a kind of surrogate. The structure of the subject matter to be taught imposes limits on any teacher's independence. In elementary courses, a premium is naturally placed on clarity of exposition and sequential presentation. Yet the responsibility that devolves upon the teacher in one of these situations may become very important, as any ex-student of grammar or analytic geometry will easily recall. We have the impression that in large courses that regularly employ graduate students as leaders of discussion sections, there is in many cases much room for improvement in the counsel offered them and the resulting value of the experience for them.

4. Teaching jointly with a faculty member. This is a form of supervised teaching that ought to be more widespread than it is. It has great potential value for faculty members, as well as for the graduate students engaged in teaching and for the undergraduate students being taught. An undergraduate seminar or small discussion course, based on the expert knowledge of both the faculty member and the graduate student, is probably the most convenient setting for joint teaching, with the co-teachers planning the course together and supplementing each other's contributions as the course proceeds.

5. Lecturing. Advanced graduate students often have specialized knowledge of some topics that is superior to their professor's knowledge of these topics. Advanced undergraduates can often profit from the presentation of this knowledge in a lecture. Helpful advice from a supervising faculty member is easily arranged, since the plan of a lecture can be discussed in some detail beforehand and the presentation can be commented upon afterward.

6. Offering one's own course. Graduate students who enjoy teaching and intend to enter the teaching profession should be encouraged to develop courses of their own, with faculty advice as needed. Two or more graduate students could jointly teach their own course. The benefit for the graduate student or students lies chiefly in the additional experience and responsibility.

The benefits to faculty members and to undergraduate students can be substantial. Such courses need not be confined to the graduate student's major department. The Dean of Undergraduate Studies has administrative responsibility for a variety of extra-departmental courses that may be taught by graduate students.

Academic work done during candidacy for a degree should in general be supervised and evaluated. This applies as much to teaching as to research. The master-apprentice relationship appropriate in the research training of advanced students is equally appropriate to their teaching experience.

By "supervision" we mean advice on planning of teaching and suggestions during the performance. We do not mean management of schedules and administrative arrangements, nor issuance of a set of instructions to be implemented by the graduate student. The kind of supervision that is most useful will depend on the kind of teaching being done and the personalities involved, but in any case should be as nearly as possible simultaneous with the actual experience of teaching.

By "evaluation" we mean a series of conferences between a faculty member and a graduate student currently or recently engaged in teaching. We do not mean a system of grading.

The most important purpose of such evaluation is to help the graduate student improve his teaching effectiveness. New teachers should begin to realize how they can learn from their students, and should begin to develop the habit of self-criticism. Teaching, as a professional communication process, should not be viewed as a private activity exempt from professional criticism. These are cardinal principles, which are best conveyed to a graduate student through their application to his or her own teaching experience considered as an example.

Another purpose of evaluation is to enable the faculty member, when writing recommendations to possible employers, to comment usefully on the new teacher's qualities. Ordinarily recommendations contain the most favorable comments that conscience and knowledge allow, but they are sometimes weakened by vagueness.

In order to evaluate a graduate student's teaching, a faculty member needs information, which may come from one or more of four obvious sources. First, the graduate student's reports of the experience in teaching may often have great value, especially if one inquires into the details of what occurred and why. Second, evaluations and comments by the students taught may provide a starting point for an analysis of the teaching process; more rarely, they may even contain such an analysis. Third, there is the possibility of visiting classes in progress. We view this idea with some skepticism. The cost may be high: visiting several classes is time-consuming for the visitor and almost always mildly disruptive for the graduate student teaching or the class being taught. The benefits may be low: each class meeting is unrepeatable; the visitor, unless trained and experienced as an observer, may be able to observe only superficially or remember only partially. Regular class visitations can be worthwhile when undertaken by a faculty member who directs a teacher-training program and also teaches a course in teaching methods to the same graduate students he visits. Otherwise, if a faculty member is to be present in a class being taught by a graduate student, we think it would be better for him to come as a participant rather than merely an observer. Fourth, there is the possibility of recording classes on videotape. This, we think, is on the whole preferable to faculty visiting. Experience indicates that once installed, the videotape apparatus is ignored by teachers and students; the mathematicians led by Karel deLeeuw, and others, have reported this to us. The videotape can be played back; any part of it can be observed by any number of viewers as many times as necessary.

Finally, we wish to emphasize that the purpose of observation and evaluation should not be to praise or blame, but to understand the process of teaching and all the elements of communicative behavior which may help a teacher succeed. The atmosphere should be one in which criticism is offered for the purpose of cooperation. We recommend that wherever possible graduate students be encouraged to act together as colleagues in analyzing and criticizing one another's work as teachers.

A Teaching Requirement?

SES received a generally favorable response to its question on a teaching requirement for the Ph.D., but did not interpret this as a mandate to urge the adoption of such a requirement in all departments. Neither do we.

In a sense, argument over requirements is merely a representation of argument over principles. While we have no desire to urge a universal requirement, we do believe strongly in the principle set forth in our recommendation, namely, that teaching experience ought to be a normal part of Ph.D. training. We recognize that there are counterarguments, and undertake to answer them at this point.

First, in some fields of study it is said that the Ph.D. is a "research degree." In fact, however, the degree certifies more than the capacity to carry out research. A Ph.D. candidate's knowledge of his discipline is rightly expected to be broader than that strictly necessary for the specific research in which he is engaged. The Ph.D. degree is properly regarded as a professional degree representing, ordinarily, certified competence as both researcher and teacher.

Second, it is argued that some recipients of the Ph.D. degree will never hold teaching posts, and therefore should not be expected to include teaching experience in their graduate training. But students' employment expectations, or their presumed expectations, cannot by themselves determine educational policy. We would have a ready answer for candidates who said they intended to do no research after receiving the Ph.D., and therefore should not be expected to do any research as part of their graduate training. It might be argued that the downturn in college enrollments predicted for the early 1980's makes teaching experience for Ph.D. candidates an unrealistic and unreasonable imposition; whatever the expectations of the candidates, the job market of the future will not hold teaching positions for all of them. We believe that this argument, like the previous one, seriously underrates the transferability of teaching skill. College teaching is by no means the only activity to which teaching experience is relevant; as we pointed out earlier, teaching skills are involved in all kinds of communication of specialized knowledge to laymen.

Third, there is a possible objection from or on behalf of the undergraduates who usually constitute the audience for the graduate student's teaching efforts. Some faculty members have said, in effect, we have graduate students we could not in good conscience unleash upon Stanford undergraduates. In reply, we would point out that they are going to be unleashed on someone. And we would ask three questions. If the factor that indicates such graduate students would be poor teachers is their course work, is it wise for them to continue as Ph.D. candidates? If the negative assessment of their teaching abilities is based on personality traits, how can one be sure these traits have been accurately observed and their effect on teaching correctly inferred? Finally, what degree of responsibility is the faculty member prepared to accept in supervising the training of these graduate students?

Fourth, it is sometimes objected that supervising and assisting graduate students engaged in their first teaching efforts would require inordinate amounts of a faculty member's time. What we chiefly ask, however, is not a great increase in the time allotted to graduate students, but rather a different use of the time already allotted to them. Consultations between the Ph.D. candidate and a faculty adviser need not be limited to research progress, but can include difficulties encountered in teaching as well. Just as the faculty's research plans now incorporate opportunities for graduate students, their teaching plans should incorporate opportunities for graduate students to teach. Some faculty members in Engineering, Humanities and Sciences, and perhaps other Schools as well now prepare their teaching plans in this way; in principle we believe that all faculty members supervising Ph.D. students should do so.

When all this has been said, we concede that supervision of graduate student teaching will require a modest increase in the commitment of faculty time. We believe that the department, rather than the individual faculty member, should decide how large such an investment of faculty time should be.

2. *Every department shall include in its Departmental Program of Graduate Study a description of the opportunities available to those Ph.D. candidates who desire teaching experience, indicating the point in time when such experience is normally acquired.*

In many departments, this recommendation requires in effect a comprehensive review of faculty members' activities in order to uncover potential opportunities for graduate student teaching. Such a review is necessarily and properly left to the departments, but a few suggestions can be offered here. Interdisciplinary programs exist in such fields as environmental systems analysis, sound and noise pollution, health-care delivery systems, social ecology, human biology, and values, technology, and society; these seem to us to offer fertile ground for the teaching efforts of graduate students. Second, we question the prevailing assumption that graduate student teachers can assist only in elementary courses, and we would particularly encourage faculty members who teach only advanced courses to give serious thought to the possibility of having third- and fourth-year graduate students assist individually or jointly in the teaching of first-year graduate students. In general, we emphasize again that the particular forms teaching experience may take will vary widely among students and among disciplines. What all forms of teaching experience should have in common is the opportunity to communicate knowledge to persons differently or incompletely trained.

3. *Each department's plan for teaching experience for its graduate students shall be included, in the year of adoption, in the department's Annual Report to the President of the University, and subsequent modifications in the department's plan shall be described in the subsequent Annual Reports.*

This recommendation grew out of extensive discussions about possible means of improving the exchange of information between departments and securing continuity of policy. We considered and rejected the idea of a new interdepartmental committee and the idea of an annual departmental report to the Committee on Graduate Studies. We believe that a section on graduate student teaching can economically be included in a department's Annual Report to the President, which already represents a serious and well-organized attempt to provide an overview of the department's work for the year. We expect that the Dean of Graduate Studies and the Committee on Graduate Studies will consult these reports with a view to stimulating an exchange of ideas between departments, and that they will notice departments that encounter difficulties in arranging teaching experience for their graduate students.

4. *The Dean of Graduate Studies shall be responsible for establishing a small library of resource materials on the training of teachers, and for liaison with a member of each department with a view to improving the training of teachers.*

The committee considered various means of promoting the circulation of ideas for the improvement of teacher training. We have concluded that the simplest machinery is likely to be both the most effective and the longest-lasting. This recommendation speaks only of liaison between a member of each department and a centralized resource center; we do not recommend that any one member of a department should have sole responsibility for the teaching experience of Ph.D. candidates. As we have suggested earlier, this responsibility rests in large measure with all faculty members supervising the other work of Ph.D. candidates, especially their research training. The duties of the faculty liaison should be limited to making sure that there is a flow of information in two directions, from the department to the resource center, whence other departments may obtain useful ideas, and from the resource center to his or her own departmental colleagues.

5. *Videotape equipment shall be made readily available for faculty members or graduate students engaged in teaching.*

At present, a few departments or schools have ready access to such equipment. Given its great utility as a teacher-training medium, videotape should be more widely available, and arrangements for its use, budgetary charges, and other complicating factors should be kept to a minimum. Either the Provost, the Dean of Graduate Studies, or the Dean of Undergraduate Studies, or all of them, should take responsibility for making videotape equipment readily available.

6. The nature and extent of a Ph.D. student's teaching experience shall not be determined by the amount or source of his or her financial support.

Financial support should not be permitted to create incentives for students to engage in teaching from which they would otherwise refrain. Nor should financial support be permitted to create incentives for a kind of teaching experience that is less valuable in the professional education of a graduate student, as against a more valuable kind. Teaching Assistantships should not be assigned to graduate students on the basis of need for financial support, but on the basis of need for the educational experience involved.

This recommendation, and the implications of it that we have just spelled out, will be met with the following objections:

1. Some departments need many Teaching Assistants, more than they can obtain from their graduate student population without recourse to financial incentives. It would be unreasonable, and injurious to undergraduate instruction, to prevent such departments from employing their own graduate students as Teaching Assistants in sufficient numbers to meet the departments' commitments to undergraduate teaching.

2. Some graduate students need more financial assistance than they can possibly obtain through the usual sources of financial support and summer employment opportunities. It would be unreasonable to deny them the opportunity to earn additional money by doing work for which they are highly qualified.

3. Departments' needs for Teaching Assistants and graduate

students' needs for financial support can be brought into alignment realistically and equitably through the operation of the market forces of supply and demand. Departments will not offer more Teaching Assistantships than they need to offer. Graduate students will not accept more employment than they need to accept. The total effect will be to minimize simultaneously the costs incurred by the departments and the costs incurred by the graduate students.

The arguments presented in the three preceding paragraphs strike us as unrealistic. A department can too easily persuade itself that the Teaching Assistants need, from an educational standpoint, precisely the experience the department is offering them. It can too easily assume that graduate students in financial straits will choose only those teaching experiences that will further their professional education, and will remain in graduate school only so long as their financial situation is realistically tenable.

The potential for rationalization and exploitation has been borne out by the operation of market forces in departments here and in other universities. This particular labor market is too complex, too responsive to faculty members' desires with respect to the deployment of their own energies, too much influenced by personal relations between faculty members and graduate students, and too vulnerable to the effects of role confusion in these personal relations. Plainly, inequities result. Poverty-stricken graduate students are impeded in their progress toward the Ph.D. degree, while affluent graduate students progress rapidly toward the degree and thus to regular employment at a competitively determined salary. Such inequities create understandable resentment. The Baldeschwieler committee reported: "The students feel that it is grossly unfair to have to serve as a TA for an entire year, working an average of 20 hours per week, thus possibly incurring a penalty in their progress toward the Ph.D., while others do nothing for their stipend and can concentrate on their own studies."[*]

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[*] "The Teaching Assistantship at Stanford," p. 7.

Who would tolerate a situation in which affluent graduate students were ordinarily allowed to submit Ph.D. dissertations requiring only half as much work as the dissertations expected of other students with fewer financial resources?

The Baldeschwieler committee recommended that Teaching Assistantships be distributed widely among graduate students, and suggested fractional appointments of one academic quarter or even less as appropriate means of achieving wide distribution. We concur with this recommendation. We would add that in departments which require teaching experience, the amount of teaching required should be the same for all, irrespective of the student's financial situation. The principle behind our Recommendation 6 follows from all we have said about the importance of teaching in graduate education. We realize, however, that its implementation will not be easy in all departments, and will depend on the sources of funds available to a department, on the balance between graduate and undergraduate students in the department, and on the kinds of teaching experience available and appropriate to graduate students in a particular discipline.

For a department with many undergraduate and few graduate students, there are, we believe, two acceptable ways of approaching the problem. One solution would require the department to calculate the amount of teaching to be done by graduate students as part of their professional education, and hire as many lecturers as necessary to teach the remaining undergraduates. The other solution would require members of the faculty to teach in undergraduate courses now staffed by graduate students. Neither of these partial solutions would meet the major need of many graduate students who now accept very heavy teaching burdens, i.e., the need for summer support to enable them to pursue their work. Accordingly, where either of these solutions is adopted, provision should be made for adequate summer support for graduate students as a high-priority budget item even in the face of financial cutbacks.

Further, we recommend that where possible, the financial support and Teaching Assistantship budgets be combined in a single budget. This has been done in English, Psychology, and Philosophy, with good results. The combined budget provides steady financial support for graduate students, obviates the necessity for a graduate student to teach simply because he or she is receiving support from funds allocated to Teaching Assistants, allows graduate students to benefit from the tax advantages of income-averaging, and enables them to teach at an appropriate point in their graduate education.

Different and more complex problems will arise where financial support for graduate students is significantly dependent on research budgets, especially research budgets that are subject to external constraints. Even under these circumstances, however, we urge the departments to be guided by the idea of equity that our recommendation is intended to effect.

> 7. *No graduate student shall normally have teaching duties for more than four academic quarters. Exceptions to this rule must be approved in advance by the Committee on Graduate Studies.*

The purpose of this recommendation is to guard against undue prolongation of graduate study. Many Ph.D. students will acquire enough teaching experience in one or two quarters. Others will need or want to teach for an entire year. But very rarely can teaching for more than four quarters contribute to the education of the graduate student.

> 8. *The teaching duties of a graduate student shall be awarded academic credit commensurate with the time allotted to them if the student so desires.*

Here our purpose is simply to make certain that the transcript of academic work adequately reflects teaching experience. For the information of potential employers who examine the transcript, there should be an indication of the amount of time spent teaching. Letter grades are unnecessary; a simple + to indicate satisfactory performance is sufficient. The nature of the teaching experience should also be indicated on the transcript. If a graduate student exercises special initiative and responsibility, this should be indicated on the transcript in a way that clearly differentiates between this experience and the ordinary work of a Teaching Assistant or teaching apprentice.

Philip Dawson, CHAIRMAN
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Associate Professor of Psychology and Fellow of the University, Director, SGES

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CHAPTER VIII

Financial Aid

Report of the Topic Committee

We have entered a period in which University funds for graduate student support are under increasing pressure from students who traditionally have met the cost of their graduate education with some combination of outside awards, personal resources, and University fellowships or assistantships. The financial aid picture has darkened with recent reductions in both the number and the kind of outside awards available to graduate students. NDEA Fellowships are not being refunded. California State Fellowships were discontinued for a period and face an uncertain future. National Science Foundation Fellowships are being cut in half, and NSF Traineeships and NSF Summer Teaching Assistantships discontinued. The New York State Legislature has eliminated the Regents' Fellowships from its budget. The Woodrow Wilson Foundation will award no fellowships for 1972–73. Most important for Stanford (as Figure 1 shows) has been the ending of the Ford Foundation Grant that permitted the relative luxury of guaranteed four-year support (FYGA) for doctoral students in the Humanities and the Social Sciences.

OBJECTIVES OF FINANCIAL SUPPORT

In allocating the limited funds available to students in Ph.D. programs, we believe the University should be guided by the following principles:

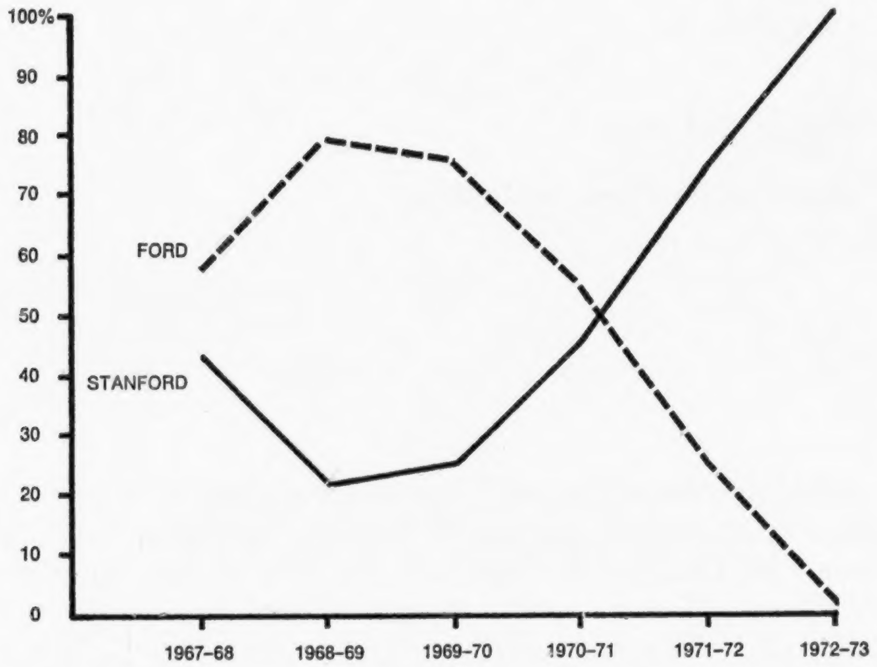

Fig. 1. Relationship of the Ford Foundation Grant to the University Fellowship Budget.

1. The University must continue to attract first-rate graduate students.

2. A Stanford Ph.D. should continue to be feasible for students of all economic backgrounds. Nevertheless, it must be recognized that the University's resources do not allow it to provide fellowship aid to meet fully the expenses most students face.

3. The University must maintain its commitment to the educational aspirations of Native American, Black, and Chicano students.

4. Financial aid policies must support, not undermine, the quality of intellectual life and scholarly endeavor. In particular, they should be consistent with departmental time tables for degree completion.

5. Although the concept of fairness, equity, or equality of opportunity is extraordinarily difficult to define in practice, we all

agree that such a principle should prevail in the distribution of financial aid. The distribution of aid must be equitable not just on paper, but in the perceptions of the students involved.

Students admitted for an A.M. degree normally receive their degree in one year, occasionally in two. They are therefore prepared to enter the job market within a year or two of matriculation in graduate school. Given the present extreme shortage of funds, financial aid to Master's candidates will rarely be warranted. A.M. students can more readily finance their education by personal means or loans than Ph.D. students who are here four years or more. If funds come to be more readily available, it obviously would be desirable to provide some support for selected Master's candidates.

DESCRIPTION OF CURRENT POLICIES

Sources of Financial Aid. It may be useful at this point to identify the types of graduate student support defined by the Graduate Division as reportable financial aid:

1. *University Fellowships.* Fellowships awarded to students by their departments through the Dean of Graduate Studies (where general University funds are involved), or through Deans of Schools (where departmental or School endowments are involved).

2. *Outside sources.* Support brought to the University with the student, including outside fellowships such as foundation and foreign government fellowships, and personal resources.

3. *Teaching Assistantships.* Salary and tuition support is approved by the Deans of the individual Schools and the Dean of Graduate Studies. TA's are financed by the staff benefits fund and by the teaching budgets of the School Deans.

4. *Research Assistantships.* Salary and tuition support that accompanies work on professional research projects. This support is financed by the staff benefits fund and funds provided for salaries in research contracts.

5. *Resident Assistantships.* Tuition support and partial remission of room and board fees in return for work as a resident

assistant under the Office of the Dean of Students. These assistantships are financed by the staff benefits fund and the Dean of Students.

6. *Training grants.* Outside grants made directly to departments, to support students involved in an ongoing departmental research training program. Such grants provide stipends plus tuition.

7. *Internally administered federal fellowships.* Awards granted Stanford by the federal government, including NDEA and NSF traineeships. A number of NDEA and NSF traineeship awards are allocated to departments by the Dean of Graduate Studies and assigned to students by their department.

8. *Grants-in-aid.* Emergency funds administered by the Financial Aids Office.

9. *Loans.* Funds administered through the Financial Aids Office and consisting of three types: (1) National Defense Student Loan Program (NDSL; long-term, ten years); (2) University loans (short-term, one year); and (3) Federal Insured Student Loan Program (FISL; long-term, ten years).

Figures 2–4 indicate the sources of support for Stanford graduate students in 1971–72. The sources are divided by category (University funds, U.S. Government funds, and student-obtained funds) and by academic grouping (Humanities and Social Sciences, Physical Sciences, and Engineering).*

Admission Without Support

Stanford, at least the School of Humanities and Sciences, has had scant experience in recent years in offers of admission without financial support. Universities such as Cornell, Columbia, and Princeton report that, with some variation from department to department, acceptance rates among students admitted without financial aid have differed only slightly from those for students offered such aid. Stanford's experience for Fall 1971 acceptances in the Social Sciences and the Humanities is shown in Table 1 (p. 144).

The three students in the Social Sciences who accepted ad-

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* Detailed figures on federal support are given in Appendix VIII-1, Table 1.

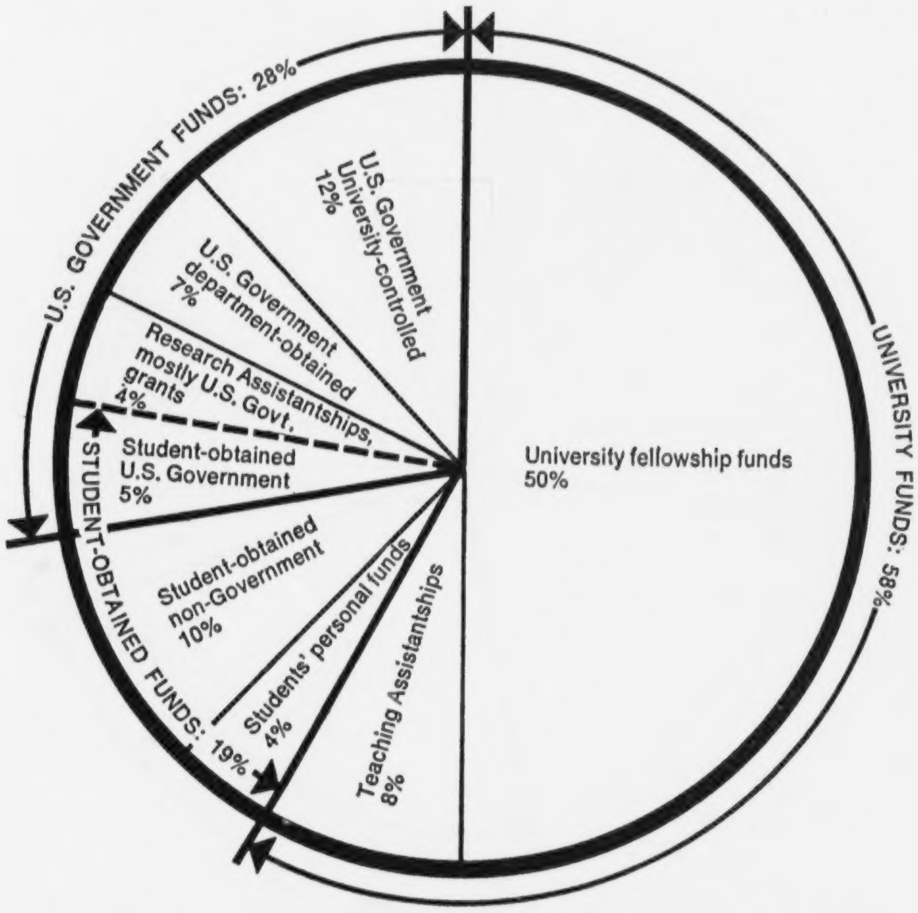

Fig. 2. Sources of Student Support in the Humanities and the Social Sciences, 1971–72. Amount: $3.7 million. No. of students: 560. Only the first four years of graduate study are covered. Tuition for Research Assistants from the University's staff benefits fund is included under Research Assistantships. (Prepared by the Office of Graduate Awards in September 1971 from Graduate Division records.)

mission without financial support all had indicated in their financial aid applications that they could meet the cost of their graduate education from personal funds. On the other hand, the eleven other Social Science applicants who indicated that they could meet the cost of graduate education at Stanford from personal funds rejected our acceptance offers. None of the eight students who were offered admission without support and had

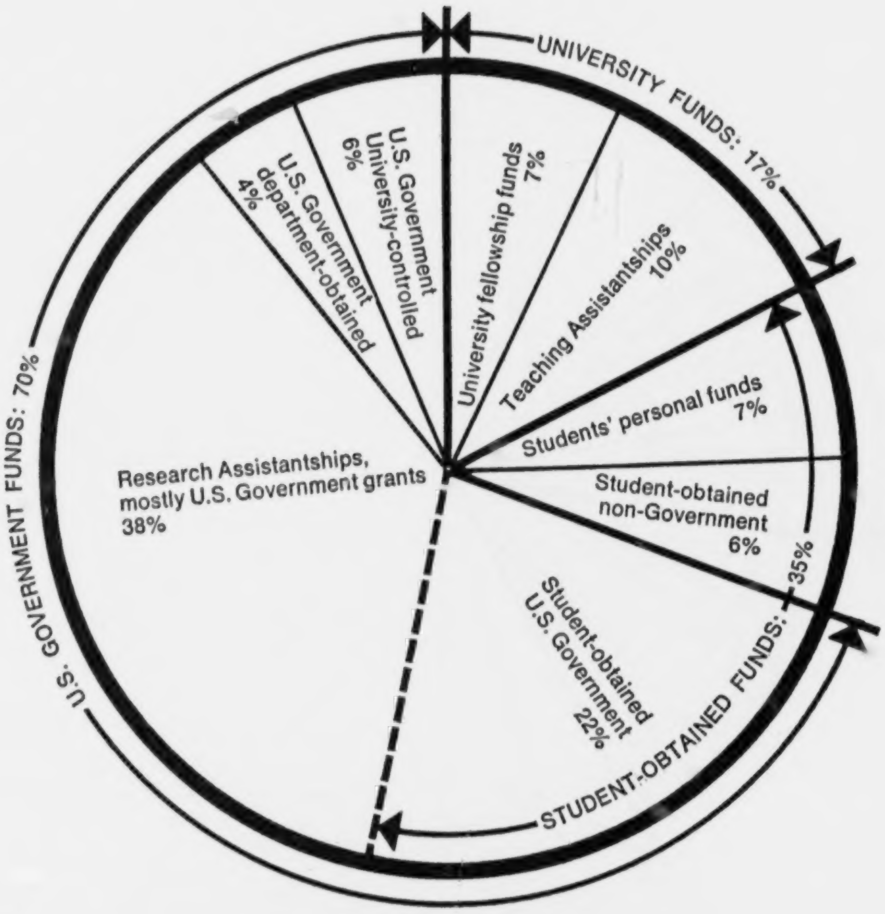

Fig. 3. Sources of Student Support in the Physical Sciences, 1971–72. Amount: $2.8 million. No. of students: 622. Tuition for Research Assistants from the University's staff benefits fund is included under Research Assistantships. (Prepared by the Office of Graduate Awards in October 1971 from information presented in the National Science Foundation Traineeship Proposal.)

indicated that they needed financial aid accepted Stanford offers. In the Humanities, no offers of admission without support were made to students who indicated that they required financial aid. The twenty-six students who accepted admission without support had indicated that they could pay for their graduate study out of personal funds.

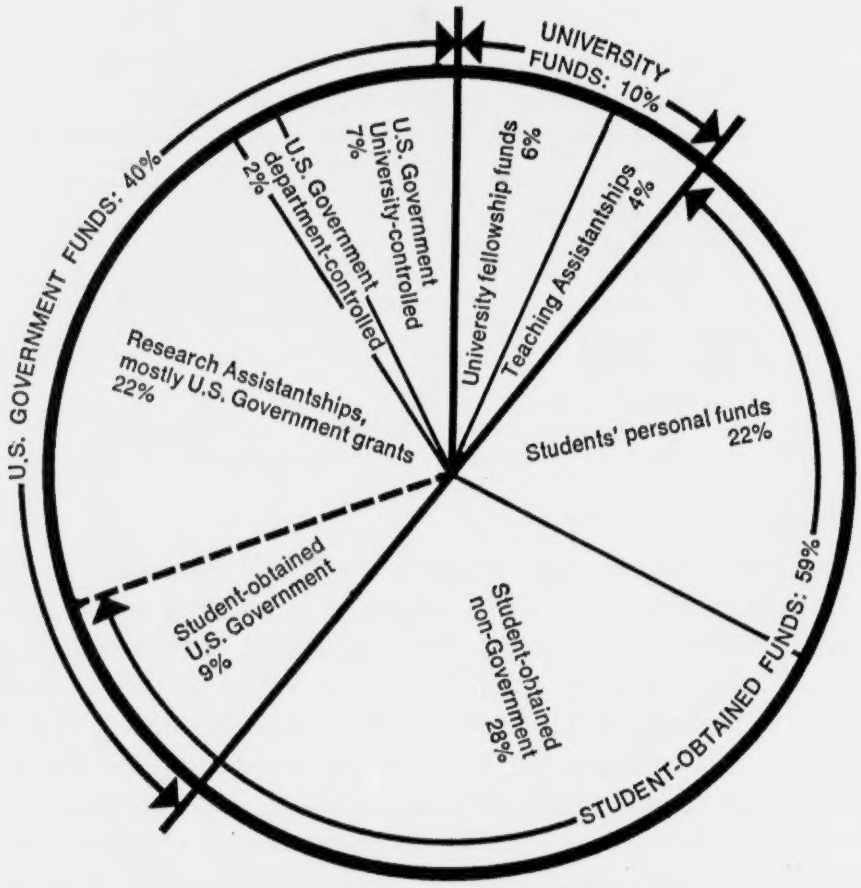

Fig. 4. Sources of Student Support in Engineering, 1971–72. Amount: $5.85 million. No. of students: 1,300. Tuition for Research Assistants from the University's staff benefits fund is included under Research Assistantships. (Prepared by the Office of Graduate Awards from information presented in the National Science Foundation Traineeship Proposal.)

Offers of admission without financial aid are increasing at most major universities. Harvard, Princeton, and Yale have confirmed that for Fall 1972, they are increasing their offers of admission without financial aid. To a fraction of its applicants, Yale will offer half-tuition only. All three universities now use some form of need analysis; all three plan to use the College Scholarship Service to help them assess need next year.

TABLE 1

Offers and Acceptances With and Without Financial Aid: Social Sciences and Humanities, Fall 1971

Category	Social Sciences	Humanities
Applicants with no financial aid:		
Offers	22	40
Acceptances	3 (14%)	26 (65%)
Applicants with financial aid:		
Offers	133	152
Acceptances	77 (58%)	109 (72%)

Delayed Admissions

An alternative strategy in a period of fiscal constraints is delayed admissions.[*] By this strategy a student is offered admission without aid and permitted to enroll after a period of up to one year, during which he can work and save the money he needs for school. The advantage of this strategy is that it gives capable students an opportunity to accumulate the resources they need in the certainty of having a place reserved for them in graduate school. Delayed admission also gives students a breathing spell between undergraduate and graduate work, an interval that in many cases may have educational as well as financial benefits. (We note that the Committee on Alternative Programs also sees advantages in such a strategy.)

The disadvantage in a delayed-admissions policy is that a department may find it difficult to count on a matriculating class of a specific size from year to year. Moreover, some students accepted under the plan may never enroll. For these reasons, delays of more than one year seem inadvisable at the present time.

LOANS TO GRADUATE STUDENTS

1970–71 found 1,148 graduate students throughout the University borrowing some amount of money from government-

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[*] Another alternative, work-study programs, is discussed in Appendix VIII-2.

TABLE 2
Loans to All Stanford Students, 1960–71

Year	No. of borrowers	Amount
1960–61	1,166	$ 627,107
1961–62	1,379	698,831
1962–63	1,409	767,157
1963–64	1,654	1,017,471
1964–65	1,617	971,739
1965–66	1,815	1,348,307
1966–67	1,918	1,491,476
1967–68	1,956	1,682,430
1968–69	2,121	1,886,733
1969–70	2,500	2,008,612
1970–71	2,252	2,146,781

sponsored and University programs. As indicated in Table 2, increasing numbers of students are borrowing increasing sums of money from these sources.

For 1970–71, graduate students accounted for 67.5 per cent of the total sum borrowed by Stanford students (see Appendix VIII-1, Table 2, for a detailed breakdown). Each School's share of graduate student loans is shown in Table 3, along with the percentage of each School's student body that borrowed money, a percentage that varies from a low of 3.5 in Medicine to a high of 47.9 in Law. The principal sources of loans are the federally funded NDSL and FISL programs and the University's own "revolving" loan program.

The NDSL program (established by Title II of the National Defense Education Act of 1957) provides annual allotments of loan funds to the states for reallocation to colleges and universities on a matching basis. The University's Financial Aids Office administers Stanford's share under regulation by the U.S. Office of Education. Loans are issued principally to students whose parents' income (adjusted according to a prescribed formula) is under $12,000 a year. NDSL loans bear no interest while the student is in school and 3 per cent per annum thereafter. The normal repayment period is ten years, with liberal deferment and forgiveness provisions for borrowers in national service or teaching.

TABLE 3

Graduate Student Borrowing by School, 1970–71

School	Enrollment	No. of borrowers	Borrowers as pct. of enrollment	Borrowers as pct. of all borrowers
Business	643	115	17.8%	10.0%
Earth Sciences	118	30	25.4	2.6
Education	434	200	46.0	17.4
Engineering	1,426	200	14.0	17.4
Humanities and Sciences	1,485	356	32.4	31.0
Law	453	217	47.9	18.9
Medicine	362	13	3.5	1.1
Other	94	17	18.0	1.4
TOTAL	5,015	1,148	22.9%	99.8%

NOTE: The overwhelming majority of borrowers in Earth Sciences, Engineering, and Humanities and Sciences, and all borrowers in the Schools of Business, Education, Law, and Medicine, are graduate students. Business, Law, and Medicine all have loan funds administered directly by the School that are not reflected in the above figures.

The FISL program (established by the Higher Education Act of 1965) is administered directly by the U.S. Office of Education. It offers student loan insurance to commercial banks, savings and loan associations, insurance companies, educational institutions, and other "eligible lenders," usually through state loan-guarantee agencies. A graduate student may borrow up to $1,500 a year (plus $500 more in the summer) at a maximum interest rate of 7 per cent on a five- to ten-year term beginning nine months after graduation. If a student's adjusted family income is less than $15,000 a year, he may qualify for a full interest subsidy from the federal government during in-school and deferment periods. As an incentive to lenders, the Secretary of HEW may (and in practice does) authorize payment of a special "allowance," determined annually, to increase the lender's return to levels in line with commercial interest rates. Stanford University is not now a "lender" under the program. Its students must turn for FISL loans to their own family banks or to Bay Area banks designated by the Office of Financial Aids. The University's role is to certify their full-time enrollment and, on request, their eligibility for an interest subsidy.

The University's own "revolving" loan program, which draws upon designated endowment funds and past gifts, provides \$60,000–\$70,000 of new (long- and short-term) loan funds each year. These loans normally carry an interest rate of 1 per cent per annum during school years, 2 per cent per annum for up to five years after graduation (by which time they are expected to be paid), and 5 per cent thereafter. Generally, students have recourse to these funds after they have exhausted the NDSL or FISL funds available to them, or when they are found ineligible for these programs despite some demonstrated need.

Loan funds are exhaustible. The current yearly increase in loan resources runs from 10 to 15 per cent. This rate of increase permits a gradually increasing dependence on loans in the face of diminishing fellowship funds. It is widely speculated, however, that loan funds administered through the federal government will continue to drop off, and that rules for administering such loans (e.g., parental income level) will not be relaxed further.

ALLOCATION STRATEGIES

Various strategies for allocating financial aid have been adopted by the different departments and Schools. The various schemes assign varying weights to need, merit, function, and equality. The following discussion summarizes the strategy options and their advantages and disadvantages.

Need Strategy

A strategy based on need requires an initial evaluation of the student's resources and his capacity to assume the costs of graduate education, or at least to forgo any support beyond a tuition exemption. Various problems arise in determining the appropriate role of parents, spouse, summer employment, etc. Any need system requires flexibility and periodic reevaluation, rather than a single, immutable decision made prior to the student's matriculation.

A strategy that emphasizes need has the advantage of stretching available funds to the greatest possible extent, and of allowing departments to maintain a large graduate program even when funds are scarce if they can attract students with independent financing. Above all, it allows students who could not finance graduate study on their own to pursue advanced degrees, and makes it possible for students of diverse economic backgrounds to study at an expensive university. Moreover, it helps students from poorer families to continue their studies without adding greatly to the indebtedness they incurred as undergraduates. Finally, many students regard need as the fairest criterion for decisions on financial aid.

Departments who allocate graduate support solely on the basis of need may find themselves at a competitive disadvantage vis-à-vis universities that ignore need in offers to outstanding prospects. More important, the need strategy requires an extensive investment of faculty time and energy in yet another round of evaluation procedures. We discuss these problems at greater length below.

Merit Strategy

In a strategy emphasizing merit, aid is allocated according to the estimated ability of a student to perform well, to fulfill the department's requirements, and to contribute to his discipline in the long run. Aid may be allocated on the basis of a one-shot assessment of the student's potential made prior to his admission, or on the basis of continual reevaluation. The limiting case would be to rank all students each year, or after each major hurdle in the program is passed, and award funds accordingly. In general, the merit strategy has the advantage of maximizing the department's ability to attract outstanding students. In the case of one-shot decisions made prior to the student's arrival, the merit strategy minimizes the need for separate financial evaluation procedures.

Such a strategy has the general disadvantage of discriminating against students from weaker schools or disadvantaged backgrounds, whose merits may not emerge till relatively late in their graduate careers. Again, if awards are made on the basis of a one-shot assessment prior to matriculation, students will continue to be disadvantaged even after they overcome their handicaps of background. To the extent that financial support facilitates effective graduate study, awards made early in the student's career may constitute self-fulfilling prophecies, since students not receiving support may have considerable difficulty catching up. To the extent that the criteria for financial awards do not infallibly select out the best students, the merit system leads to invidious distinctions based on these awards and to increased resentment and hostility between students. Again, this is especially true when awards are based on a one-shot evaluation early in the program. Conversely, if the awards are reassigned each year, the system can readily encourage compulsive competition and role-playing among students, and undermine cooperation in scholarship and feelings of collegiality—undermine, in short, precisely that socialization in professional values which a graduate program is supposed to encourage. Finally, in many fields the ranking of graduate students rests on distinctions too difficult and subjective to justify dramatic financial consequences.

Function Strategy

In a strategy based on function, a major share of the student's funds is earned by performing specific tasks for the department. These tasks typically include research or teaching, and are normally viewed as integral parts of the training program. In some departments, as discussed below, these funds are merged with fellowship funds in a single pool. Other jobs in the University also provide substantial sums of money to graduate students, but are rarely related to their education.

This form of support has the advantage of reflecting the reality of normal professional life, in which pay is awarded for the performance of some task. Certainly departments should make every effort to secure outside funds for Teaching and Research Assistantships and to include positions for Research Assistants in their research and training grant proposals. Such support has several potentially serious drawbacks, however. It encourages students to acquire a very limited range of skills, and may even force them to narrow their intellectual interests as well. Relations between students and faculty may become antagonistic in a system that in effect forces students to pinpoint their research interests before they perceive it as useful to do so. Competition for Research and Teaching Assistantships may have the same deleterious effects on student morale as the merit strategy. Finally, support in exchange for jobs that are unrelated to graduate education may unduly prolong the time to degree.

Equality Strategy

Under a system based on equality, available funds are simply divided equally among all students. This system, needless to say, guarantees equality of financial support from the University, but cannot guarantee equality of life style or feelings of deprivation. Obviously such a system works best when the students' needs and resources are similar.

A system of equal support for everyone has the advantage of eliminating at one stroke assessment problems, the need for extensive administrative activity, and competition between students. Insofar as RA and TA funds are not tied to the performance of specific functions, students are free to develop their own interests. Moreover, if stipend levels shrink much further, the great majority of students will "need" at least as much money as they can be offered.

Under present circumstances, the equal-awards strategy has several disadvantages. As the amount of money available declines, such a strategy might generate pressure to reduce the size of the graduate program, even to unviable levels, rather than reduce further an already minimal stipend. If, alternatively, the size of the stipend rather than the number of students is reduced, only students with independent means will be able to afford graduate education at Stanford.

Department Fellows Plan

A mixed-strategy approach to graduate support is taken by English, Psychology, and Philosophy. The strategy in English may serve as a model for departments that do not receive outside research funds and therefore must rely almost solely on University support. The plan is in its second year of operation, and is being continued.

All graduate students in the English Ph.D. program are covered by the Fellows Plan, which is designed to equalize financial support, teacher training, and tuition benefits, as well as to spread the student's tax liability for teaching salary equally over four years. All Fellows receive approximately the same level of support, whether the source is University funds or an outside fellowship. Provided the student makes satisfactory progress, tenure is normally for four years.

All students are liable for a specified standard amount of teaching (set on educational grounds) at the department's convenience (in consultation with the student), though no one is required to teach during all four years. Throughout his tenure, each Fellow has a fractional appointment as a TA in each quarter and receives part of his support from Teaching Assistantship monies, equally distributed over four years, though actual teaching assignments need not be spread evenly over the four years. The balance of support comes from fellowship monies, also distributed equally over four years. At the end of four years, all students have received sufficient tuition grants to meet the University residency requirement.

Students who receive outside fellowships that pay more than the standard University stipend in the department do not receive fractional TA appointments, and are expected to teach the standard amount without compensation as part of their Ph.D. training.

Fellows may not take on additional teaching for extra money during their four years. Departmental needs for extra teaching are met by employing fifth-year students, Master's candidates, former students, etc.

Assessment of Need

In practice, departments use various combinations of strategies, and should continue to do so. Although there is much to be said for assigning need a greater role in the allocation of financial aid, the assessment of need proves to be a formidable task, indeed an almost impossible task at the University level.

Among the thorny questions that confront anyone who would devise a rational scheme for assessing need are the following: To what extent (if any) shall we take parental income into account? Many would argue that parental income is irrelevant when we are discussing a mature graduate student. But suppose the student's parents claim him as a deduction on their tax returns? Although we might be reluctant to require parental aid, should we ignore such aid when it is known to be provided in large amounts? How do we weigh prior debts? Are we willing to treat debts incurred to finance education in the same fashion as debts incurred to finance a car or a vacation? How much of a student's personal assets (savings, car, etc.) can we ask him to dissipate? Again, shall we consider the source of these assets? How shall we take account of a student's dependents, or financial obligations to his extended family? Perhaps the most difficult problem is the income of the spouse. We are agreed that a student whose spouse earns $30,000 a year has small claim to financial aid. Conversely, we are reluctant to treat spouses with low incomes earned in clerical or manual labor as a natural resource to be exploited at the University's pleasure. And even the most intrepid assessor of need may find it difficult to formulate policies on the treatment of common-law marriages, pluralistic marriages, homosexual alliances, and group living arrangements intended precisely to minimize expenses.

Another complicating set of issues arises when we ask the question, to which funds can means tests be applied? Over the funds students bring with them, for example—personal resources, foundation fellowships, government grants—the University has no control. A second category of funds could be administered on a need basis, since they are under University or departmental control. They include internally administered federal fellowships, Research Assistantships, and many Teaching Assistantships. Since specific intellectual tasks must be performed by the recipients, however, a merit factor is unavoidable.

These problems, though knotty, are not insoluble, but the optimal solutions may well differ from School to School, and even from department to department. Accordingly, although we are convinced that need will have to be given increasing weight in the allocation of financial aid, we believe that the detailed assessments of need should be made by the people most directly affected. A corollary of the latter belief is that the graduate students involved should play a large role in financial aid decisions. Finally, the College Scholarship Service, in conjunction with a number of graduate schools, is developing a form that will provide the basic data required for the assessment of need. Such a form will make the task of allocating financial aid more feasible for individual Schools and departments.

SUPPLEMENTARY SOURCES

Supplementary forms of support include (1) work, which may or may not be related to degree objectives or academic program, and (2) University housing subsidies. Present University policy on additional employment for fellowship holders is as follows:

> Students receiving fellowship aid are expected to devote full time to study. If a student finds he must supplement this support, he is urged to consider carefully the alternatives to additional employment (long-term loans, savings, liquidation of assets, parental support, etc.). He should also talk the matter through with his departmental advisers. Employment that involves more than one work-day per week (or about eight hours) must be known to the department, and will require as well the approval of the Dean, for continuation of the fellowship.*

We believe that what the University considers maximum stipend or "full" support is in fact only partial support when measured against actual living costs in the Bay Area. A minimal budget for the nine-month academic year would look something like this:

Tuition fees, 1972–73 (except in Business and Medicine)	$2,850
Board and room (varies with type of accommodation)	1,350
Books and supplies	200
Miscellaneous expenses, laundry, clothing, etc.†	400
TOTAL	$4,800

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* Graduate Awards Office, January 1972.

† This figure does not include anything for long-distance travel, for unusual medical or dental expenses, or for the operation and maintenance of an automobile, which many students find necessary; expenses for such items will be additional.

Many students bridge the gap between their stipend and their living costs with jobs unrelated to their studies. Such jobs reduce the demands on University funds, and permit students to control more of their personal lives without University intervention. Unfortunately, such jobs often prolong the time to degree without the mitigating academic advantages of most Teaching and Research Assistantships.

University-Subsidized Housing

The University currently offers students some economic relief by providing on-campus housing in Escondido Village. Currently, Escondido rents run below the market level for the midpeninsula. Rent increases slated for the next five years, however, may eliminate the differences.

For the time being, Escondido Village housing represents a University subsidy, which in our view should benefit those most in need first. Extensive and complex need assessment, however, may involve administrative costs that outweigh the benefits, unless an uncomplicated yet sound principle for determining need can be arrived at. The University already will move up on the Escondido waiting list students whose demonstrated need is unusually great. We would encourage extension of this policy.

Summer Support

Many departments expect students either to work directly toward their degree objective during the summer or to work at jobs that indirectly contribute to their education. Departments must make these expectations known to prospective and entering students.

In such cases, particularly when summer course work is required, stipends for the other quarters should be adjusted upward, loan budgets expanded, and, where possible, Research or Teaching Assistantships provided. The Dean of Graduate Studies should consider accommodating special requests for summer aid when it can be demonstrated that such work will significantly accelerate progress toward the degree.

RECOMMENDATIONS

Because departments and schools differ enormously in terms of need, program structure, available resources, and evaluation procedures, it is impossible to suggest a single detailed support program or "package" that would be universally applicable or equitable. What the committee can offer is a set of general principles and considerations that should guide the support policies of all departments and Schools.

1. *To the extent that cutbacks in fellowship support must be made, the first year of the Ph.D. program is the optimal target for such cutbacks.*

We make this recommendation on several grounds. First-year students are in the best position to draw on family resources; they are also the most likely to have savings of their own, or at least to be free of the debts that often accumulate during graduate school. It seems appropriate to concentrate support in the later years of the program, when the student is closer to being a professional serving his department and discipline than a neophyte who is acquiring basic skills and information. Moreover, attrition is normally greatest in the first year of a Ph.D. program, and cutting back first-year support would therefore minimize the investment in students who will not complete their degree. Many students develop greater financial need as they grow older and their family responsibilities multiply. They also tend to be involved in more demanding research projects in the later years of graduate study, and it is widely agreed that students should be as free as possible of financial strain during these years. Finally, smaller offers to first-year students theoretically might serve as a useful test of the applicant's motivation; unfortunately, however, a student's response will probably tell us more about the size of his parents' income than the intensity of his professional dedication.

We recognize that the policy we recommend—cutting back first-year fellowships first—may hamper a department's efforts to attract the very best students. We believe, however, that most students select a graduate school for the quality of its program in their field, and not simply for the size of its fellowship offers.

2. *All students admitted to Ph.D. programs should receive tuition for the duration of residency. The only exceptions to this should be those unusual cases in which a student is clearly both able and willing to assume the full cost of his education.*

Departments should not hope to balance their support budgets without compromising their program by the admission of numerous fully qualified students of unusual financial means; Stanford is competing with many excellent institutions, including public universities that charge little or no tuition, for the small number of students who are able and willing to pay their own way.

3. *If a department varies the amount of financial aid in accordance with the students' relative "merit," it should do so only in the first year of the program.*

Three considerations prompt this suggestion. First, entering students are already ranked during the admissions process, and this ranking is based on several "objective" indices of achievement and ability. Second, the recommended policy would maximize the departments' ability to attract the most sought-after applicants despite the general cutback in funds. (Such applicants, incidentally, are most likely to reduce the departments' financial burden later on by earning support from outside sources and by finishing their degree in a reasonable time.) Finally, as we have argued above, there are enormous disadvantages after the first year to making merit distinctions the basis of unequal support. A program in which students feel themselves to be in constant competition for scarce resources (in particular, a competition that necessarily involves highly subjective criteria and very difficult comparisons) will be seriously compromised by poor student morale and the undercutting of scholarly values.

4. *Whenever possible departments should attempt to provide equal and adequate support for all students beyond the first year. If it proves necessary to provide unequal support beyond the first year, it is appropriate and desirable to take into account the students' financial means and need in determining support levels.*

Initial cutbacks should be absorbed equally by all students until these cutbacks become intolerable. We are of course aware, as our earlier discussion indicates, that recommending evaluations of need entails problems. Again, we believe the graduate students in a given department can be a great help, both in formulating general policies for need assessments and in applying these policies in specific instances. It should be noted that using financial means or need as a basis for differing support levels is especially difficult in the case of first-year students. The relevant information is more difficult to obtain, and the department is faced with the time-consuming task of making such assessments for many students who ultimately choose to go elsewhere. (The department also would face some perplexing budgetary problems because of its uncertainty about the actual cost of first-year support.) Finally, it should be emphasized that assessments of student need will not provide an easy way for a department to make large savings. Very few Stanford students can remain in graduate school without either receiving full University support or incurring heavy indebtedness.

5. *Every entering Ph.D. student (except those who are totally self-sufficient) should be guaranteed some combination of fellowship, assistantship, and loan funds amounting to the standard stipend plus tuition for the first year of graduate school.*

If a loan is an integral part of the support package, the loan component of the award should be clear and guaranteed. Prospects for loans after the first year should be estimated at the time of the student's initial award, so that he may estimate his possible indebtedness over a four-year period and judge whether or not to accept Stanford's offer.

6. *Even if some departments find it impossible to offer full support to all first-year students, a special and independent program*

of fellowship aid to minority students should guarantee tuition plus the standard stipend for the initial year of study of every such applicant accepted at Stanford.

Most minority graduate students come to Stanford with a similar financial history: (1) Considerable indebtedness, not only to previous colleges and universities, but also to commercial lending agencies; (2) financial obligations extending beyond their immediate families, with mothers, brothers, and sisters at least partially dependent on the student; (3) the absence of family resources on which to draw; and (4) strong pressures to begin work after completion of undergraduate study.

The University has acknowledged a special obligation and commitment to recruit and train qualified minority applicants. This implies a recruitment and support program that will make graduate education at Stanford (a) possible and (b) attractive for minority applicants. Given the financial obligations and status of most minority applicants and the competition from other universities for the most qualified minority applicants, the University can only make good on its commitment to minority education by offering minority applicants full first-year support. Since the immediate future holds an eager employment market for minority men and women with graduate training, it is reasonable to expect these students to take loans on the same basis as other students *after the first year of the program.*

7. *Students should have the option of delaying their matriculation in a graduate program for up to one year, so that they may accumulate funds to defray first-year expenses.*

Delays of longer than one year seem unfeasible at this time, although students may, of course, re-apply for admission if they choose to interrupt their education for a longer period. In view of the ever-worsening financial aid picture, departments would do well to consider seriously applicants who have chosen to work for a few years before seeking admission to graduate school.

8. *The University and its departments have an obligation to provide detailed and realistic information about the high costs of living in the Stanford area.*

It should be emphasized that even the relatively generous stipends provided by some departments rarely prove sufficient to sustain a standard of living that a graduate student deems satisfactory.

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CHAPTER IX

Alternative Programs

Report of the Topic Committee

The Committee on Alternative Programs was instructed to "investigate the possibilities of alternative programs and guidelines in graduate work." It was asked specifically to consider the following questions:

1. Most departments in Humanities and Sciences offer the Ph.D. only. Is there a need to develop more Master's programs? In what fields? What are the job possibilities for A.M.'s?
2. Graduate students typically enroll as full-time students. Is there a need for part-time-student categories?
3. What barriers currently hinder women in both entering and completing degree programs? What changes will lower these barriers?
4. Graduate students are admitted to graduate programs to work toward a specific degree. Should an open admissions category (much like the graduate-at-large) be created to permit students the experience of graduate work without an immediate decision to work toward any particular degree?
5. There are provisions for a student to develop an interdisciplinary Ph.D. Should such a provision be established for candidates for the A.M.?
6. The University frequently permits government employees or visiting scholars to enroll in classes for improvement of their skills with no degree objective in mind. Should such a category be opened to all students?

INTRODUCTION

In considering the issues enumerated in our charge, the committee has taken three critical questions into account:

1. In what areas is there a demonstrable need for changes in graduate policies or programs?
2. How can Stanford best respond to those needs while making the best use of its unique strengths?
3. Does Stanford have the resources to meet those needs in ways that complement its major function at the graduate level, the training of highly qualified teachers and researchers?

In our recommendations, we have sought to provide the University with mechanisms and opportunities for flexibility and innovation. In our view, and that of many others who have recently surveyed higher education, a university's excellence and reputation will in future depend very largely on its ability to change itself to meet academic and social needs that are growing more complex at an accelerating rate. Stanford must be prepared to redeploy its resources continually in response to these changing social and academic needs; to initiate programs designed to meet those needs in ways compatible with the University's strengths; and to commit itself to a continuing evaluation of such programs, modifying, replacing, or discarding them when they cease to serve the ends for which they were designed. What we shall recommend below are pilot programs, set up for a stipulated period of time, closely monitored, and rigorously evaluated. We would stress that the programs we recommend should be considered carefully by each department in the light of its resources, and that the students who enter the programs should meet the same high standards met by other Stanford graduate students.

Our recommendations do not contemplate a significant reallocation of the University's resources. But we urge the community to take more substantial steps as more groups and individual students with valid academic needs for "alternative programs" are identified—steps analogous to those already taken by innovative departments in the past. We have fully discussed the difficulties inherent in several of our recommendations, but are persuaded that the advantages of adopting them are great enough to more than compensate for any drawbacks.

Our study has isolated three major areas in which changes in thinking and adaptation to new student and societal requirements are needed.

First, as other SGES committees have noted, many of Stanford's graduate programs are beset by high attrition rates (see Appendix II-2). Perhaps 50 per cent of the students entering Ph.D. programs fail to complete the degree, leaving either with a Master's degree, or with all requirements fulfilled except the dissertation. We agree with the 1969 SES *Report on Graduate Education,* which pointed to "uniformity" in graduate training as a major problem; for the most part, graduate training in the Humanities and Sciences at Stanford is full-time Ph.D. training, even though other degree objectives, such as the Master's degree, or other approaches to study, such as part-time work, may be more appropriate to the needs and objectives of many highly qualified entering students. It might be thought that departments could lower attrition rates by screening their applicants more carefully; there is little evidence, however, that this is so. Even departments with as many as 600 applicants for twenty positions have attrition rates of 40 per cent or more. We agree with the Committee on the Ph.D. Dissertation and Alternative Degrees that many of the students who drop out want graduate-level education, but have abilities and aspirations that are not compatible with the standard Ph.D. program. Our first major recommendation, therefore, is:

1. *Expanded opportunities for Master's level study, both within individual departments and across disciplines, shall be provided.*

Are Stanford's departments in a position to offer well-structured programs for Master's level students? We believe that they are. In response to national declines in applications, fellowship funds, enrollments, and placements for Ph.D.'s, many departments have cut back sharply on the number of students they will accept in their doctoral program. In many cases the effect of these cutbacks will be to free departmental resources for small, well-defined Master's programs. Some of these "freed" resources can and should be applied to undergraduate education, or to both undergraduate and graduate education through advanced seminars, directed research, and the like. Not all the freed resources, however, are so readily transferred: places in advanced graduate seminars and advanced courses, the time of faculty with specific research interests, etc., might better be allocated to different academic needs at the graduate level.

Master's programs in English, Communication, and a few other departments and special programs (see Appendix IX-1) are examples of the kind of programs we would like to see more of at Stanford. As we shall attempt to show in detail below, *successful* Master's programs are aimed at students with rather clearly defined academic and career interests, and are overseen by faculty whose interests extend to Master's students and whose department supports their interests.

Second, many talented men and women who have either left graduate school or were unable to begin it because of family or work responsibilities (or both) would qualify for admission to a graduate program at Stanford and would benefit from graduate study, but are barred from graduate school by the present policies that discourage part-time study. Many recent reports on the education of women have emphasized this problem, among them the report of the SGES Task Force on Women (Appendix X-2).

For many of these men and women, carefully planned programs of part-time study would make graduate education feasible. Perhaps just as important, such programs would bring to Stanford men and women whose experience differs in important ways from that of most Stanford students; thus, facilitating part-time study would be a convenient way for Stanford to diversify its graduate student population. We therefore recommend that:

> 2. *The University and its departments shall establish policies that enable limited numbers of highly qualified students to study at the graduate level on a part-time basis.*

Later in this report we shall offer recommendations for *delayed admissions* and for *interrupted study*—two problems that have been addressed by different departments in different ways, and that relate both to diversity and to attrition.

Third, a concomitant of the decline in Ph.D. placements has been a growing need for advanced training short of the Ph.D. in many sectors of society. Some of that need, as we have noted, can be accommodated within Master's programs. In many cases, however, any degree-oriented work is unnecessary and inappropriate—as the University, in establishing opportunities for study as a graduate-at-large or as a non-matriculated student, has in effect recognized, though in a very limited way. Our recommendation that

> 3. *The University shall offer opportunities to well-qualified men and women for non-degree-oriented study at the graduate level via non-matriculated-student status in the University Division*

is essentially a recommendation that the University publicize existing provisions for non-matriculated students, and that it open its non-matriculated-student programs to others besides visiting scholars, summer students, and the like.

In general, we propose leaving the implementation of the policies we recommend, and attendant supervision and evaluation, to the department involved. The department offers the best vantage point from which to judge the effect of Master's degree programs on course offerings and faculty time. So far as interdepartmental and extradepartmental programs are concerned, however, we believe that the Dean of Graduate Studies has the experience and the overall view to best appraise the impact of such programs on the Graduate Division. We therefore have assumed that detailed statements of policy, appropriate for publication in *Courses and Degrees* and elsewhere, will be issued either by the individual department or by the Dean.

We have, however, suggested several specific directions that programs and policies might take—directions that reflect the concerns of students and faculty who have reviewed our recommendations, and that take predictable problems into account. We offer them in the hope of benefiting both the students who pioneer in the trial programs we recommend and the departments in which they study. All of our recommendations must, of course, be considered in the light of a given department's resources.

RECOMMENDATION 1: EXPANDED MASTER'S PROGRAMS

For the most part, Master's training at Stanford is a part of Ph.D. training. In a few disciplines in the Humanities and Sciences, and of course in the professional Schools, the Master's degree represents terminal professional training. But by and large, because Stanford is an institution emphasizing the training of research scholars and university teachers, the Master's degree as such receives little attention. We were agreeably surprised, therefore, to find active Master's programs in many areas throughout the University (see Appendix IX-1), and what appears to be a gradual but steady increase in their number.

We have found many of these programs to be both high in quality and well-integrated into the fabric of the University. It is primarily on the basis of their success that we encourage departments without Master's degree programs to seriously consider establishing them, taking Stanford's current programs as their models. In the rest of this section, therefore, rather than recommending radical departures from current practice, we shall largely confine ourselves to pointing out existing opportunities; the needs for training at the Master's level that might constructively be met; the variety of ways in which departments might meet these needs; and the potential benefits, both to students and to the University.

In addition to Stanford's demonstrated capacity for offering sound Master's programs, four additional observations have guided our deliberations.

First, this committee has been impressed by the possible impact on Stanford of the nationwide decline in demand for Ph.D. training. Although the effect on Stanford's Ph.D. programs cannot be predicted in detail, it is apparent that few departments at the University will be unaffected, though some will suffer more directly from the nationwide trend than others. The obvious response will be to curtail the size of Ph.D. programs, as many, if not most, departments at Stanford have already done. One result of such cuts is that qualified faculty will have fewer graduate students to supervise and seminars with fewer students to teach. One very productive use of this surplus capacity would be in meeting educational needs at the Master's level. This is not, of course, the appropriate response in all cases. In some cases, faculty may find themselves with more time for research, for attention to undergraduates, and for helping individual graduate students pursue independent research projects. We believe, however, that departments can initiate Master's programs without diluting the quality of the smaller Ph.D. programs they may come to regard as optimal. Indeed, it appears to us that thoughtfully designed Master's programs which draw upon capable, perhaps uniquely experienced, students would enhance the strength of many Ph.D. programs.

Second, given the relative ease of building Master's programs, we believe that the institution and expansion of such programs will help the University remain innovative and flexible as support for doctoral programs continues to decline or levels off.

Third, we believe that the social utility of Master's education is in many cases at least comparable to that of Ph.D. programs. In the broadest terms, we are speaking here of training people for the positions from which the results of our basic research are applied to solving problems, meeting pressing human needs, and enriching the quality of life. Without quality education and training at the Master's level, there will be a continuing gap between what we as a society know how to do and what we in fact are doing.

Finally, Stanford now provides terminal Master's degrees as a by-product of doctoral programs, particularly in departments that have no Master's program as such. Qualified students may enter doctoral programs with no real intention of continuing past the A.M., or more commonly, will realize after a year or two of graduate work that they do not want a career in university teaching or advanced research after all. This problem is aggravated by the current practice of admitting most students to graduate school directly from their undergraduate institution, with little time to acquire the experience on which one might sensibly base intellectual or career goals.

Terminal Master's degrees, then, are a real, but generally neglected, facet of graduate education at Stanford. Such neglect is by no means unique to us. In a report prepared for the Carnegie Commission on Higher Education, Stephen Spurr has remarked:

> In . . . most prestige universities, students are admitted directly into the doctoral program upon the completion of the baccalaureate. . . . Those who are not permitted to continue to the doctorate or who are counseled against doing so are frequently given the opportunity of taking the Master's degree as their terminal recognition. As a result, the Master's degree in liberal arts subjects in prestige universities has taken on characteristics of a consolation prize. It is not surprising, therefore, that the better the graduate school, the lower the repute of the Master's degree. Weaker universities frequently offer stronger Master's programs.*

Although some Stanford A.M. degrees may be considered "consolation prizes," relatively few students who take them are compelled to leave the University because of academic deficiencies. In fact, less than a quarter of the students dropping out of Ph.D. programs in the Humanities and Sciences within the first two years appear to be doing so for academic reasons.†

We believe that these four considerations are four strong arguments for further expansion of Master's programs. How extensive should this expansion be? With respect to size, we believe that new Master's programs will be most effective if their scale is limited. For example, the new A.M. program in English for community college teaching has only four students; the new coterminal A.M. program in History will probably admit no more than two or three students a year.‡ The impact of these programs is a function not of their size, but of the care with which they are planned.

We believe that the opportunities for Master's education should be greatly increased throughout the University—in both number and variety. We say this even though we recognize that it is precisely the variation in the purpose and structure of Master's programs that makes the degree confusing to many: where variety abounds, standards for excellence are difficult to define. Nonetheless, variety is one of the potential strengths of Master's education, for it assures students of flexibility and departments of an opportunity to organize programs around their greatest strengths.

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* Stephen Spurr, *Academic Degree Structures: Innovative Approaches* (New York: McGraw-Hill, 1970), p. 67.

† *Report to the Ford Foundation: The Four Year Guaranteed Assistance Program.* Prepared by the Graduate Division, December 14, 1970.

‡ History's co-terminal A.M. program allows outstanding Stanford undergraduates to receive an A.B. and an A.M. simultaneously, and to take graduate courses in History as a senior. See Appendix IX-2 for a description.

Because Master's programs differ from one another in terms of goals, they also differ in their relative comparability and compatibility with doctoral programs. The traditional liberal arts Master's degree represents an opportunity for "cultural enrichment" for many students, and perhaps for this reason is considered suspect by many. Since it is unclear how graduate study for cultural enrichment differs from undergraduate education, their reasoning seems to be, why should it lead to a graduate degree? Why invest scarce resources and limited energies in encouraging dilettantism? When objections are cast in these terms, they may seem reasonable for some disciplines; but in practice we have found it difficult to distinguish between cultural enrichment, which tends to be derided, and "occupational enrichment," which tends to be applauded. A person seeking "occupational enrichment" pursues a program that will not fit him for a particular occupational niche, but will prove valuable in a variety of occupations. We believe there is substantial merit to such study. For example, a knowledge of statistics may prove valuable to an A.M. recipient whether he goes on to work as an analyst in the government or as a social studies teacher in a public high school.

Master's programs that emphasize training for teaching or for application of knowledge are more specialized. In different ways, they more closely resemble doctoral programs. If the program is one that emphasizes research, its focus is likely to be on the evaluation, rather than the conducting, of research. This model resembles most closely the traditional Master's program of the professional Schools, but it is also viable in the Humanities and Sciences, as the new co-terminal Master's program in History demonstrates. This program, like its counterparts in the professional Schools, exploits the research strengths of the department and thus reinforces the department's Ph.D. program. Most important of all, because it is a *co-terminal* program, it enables the department to offer a richer undergraduate program to those students most likely to profit from it.

Regardless of the aims of a Master's program—whether it is directed toward career training or toward intellectual or cultural enrichment—it should not be considered an immutable addition to the curriculum. Indeed, in certain instances it makes a good deal of sense for the University to deliberately devise Master's programs with a limited life expectancy to fill pressing but relatively short-term needs. Examples of such projects are a proposed program to improve the training of teachers in black colleges (see Appendix IX-3), and an already operative program in Engineering to retrain unemployed aerospace engineers for other occupations.

Where Master's programs are directed at training for specific careers, placement may be a problem for Master's recipients. In the Schools of Education and Engineering, which have maintained strong Master's programs for many years, students leaving with Master's degrees sometimes find a stronger job market than Ph.D.'s. In Schools that traditionally have not offered Master's programs, particularly the Humanities and Sciences, placement difficulties may derive less from a dearth of job openings for Master's recipients than from a dearth of information about such openings. At the same time, placement is one area in which primary responsibility should not rest with the department; information on job opportunities for Master's students is most efficiently gathered at the University level. Because so little is known about job opportunities for Master's degree holders, we recommend that:

> 1A. *The University, through the Counseling and Testing Service, the Placement Center, and the Dean of Graduate Studies, shall engage in a thorough study of employment opportunities for A.M. holders in the Humanities and Sciences.*[*]

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[*] SGES conducted a questionnaire survey of a substantial sample of Stanford Ph.D. recipients over the past ten years, tracing respondents' employment and

If it is found that employment opportunities for A.M. recipients shift markedly from year to year, the Placement Center may want to update the study periodically.

Additional faculty time and effort will be slight for heavily course-oriented programs, but if specially designed "core" courses are added to the curriculum, or internships or on-the-job training opportunities are provided, the overall cost of such programs will undoubtedly increase. Yet it is often crucial to the success of a Master's program that it include experiences which will help the student relate his training to what he will be doing when he completes the degree. When such activities can be carried on within the confines of the University, however—if, for instance, students in a language training program teach fundamentals of grammar to Stanford freshmen rather than community college students—costs will diminish.

For students, costs are related to the time required to complete the program. Except in the rare case of a student with outside funding, Master's candidates will not receive financial support. Nor, in our opinion, should they, given the present constraints on fellowship funds and the fact that many Master's programs will lead directly to career opportunities. Although Master's programs traditionally take one year to complete, when internships, work experience, teaching, or a creative or research project are required, or when students enter a field with incomplete undergraduate preparation, programs will typically take longer than a year regardless of the formal unit requirements. Students should be apprised of this fact; the Creative Writing

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professional activity following receipt of the Ph.D. (see Appendix I-2). To date no such survey has been done on recipients of Stanford A.M.'s. UCLA, considerably more active than Stanford in Master's education, has conducted such a study of its 1969–70 Master's recipients. We quote from their report: "In general, a substantially smaller proportion of UCLA's Master's graduates are entering employment in educational institutions while a substantially larger proportion are entering employment in business, industry, government, and non-profit organizations. The responses of these Master's degree graduates indicated that the proportion actively seeking employment but without leads or commitments at the time of completing their degrees numbered 60, or 8 per cent of the total. Of the remaining 92 per cent with definite or prospective employment plans, only about 1 per cent seemed in employment irrelevant to their education." From "Annual Report, Dean of the Graduate Division, 1969–70," University of California, Los Angeles, 1971.

program in English, for example, warns its prospective students, "While it is theoretically possible to complete work on the A.M. in a year and to do the thesis, a two-year plan allows more time for writing, and, of course, less pressure to complete the course requirements."

Finally, the second-class citizenship inflicted on Master's candidates in departments where the predominant interest is research and Ph.D. training can pose a very real problem. According to one student who took a Master's degree in such a department, "I really felt that status problem. I took courses from ———. He wouldn't pay any attention to me. So I changed to ———. This helped. But I just had to accept the situation, knowing that I wouldn't be there too long."

This problem can be alleviated in a number of ways. If a department is careful to select highly qualified students, and then provides sufficient support (by means of orientation sessions, advising, and social and intellectual contact with other students and faculty), Master's candidates are less likely to seem like second-class citizens to themselves and others.

Many departments seem to fear that advertising the existence of Master's programs will result in hordes of students beating on the department's doors. Although higher visibility probably will lead to more applications, this does not, of course, necessarily mean a larger number of admissions; Stanford regularly refuses more applicants than it admits, at both the graduate and undergraduate levels. Given the great interest in Master's programs across the country, we believe that adequate visibility for Master's programs, coupled with carefully limited admissions, will assure Master's programs at Stanford of students comparable in preparation and ability to those admitted to doctoral programs.

There are several different models for Master's programs, all of which appear to be used currently by one program or another at Stanford. One is the new co-terminal program in History mentioned earlier. Other departments have more conventional terminal Master's programs. Although these programs are often formally separate from the departments' Ph.D. programs, Master's candidates take the same courses as other first- and second-year graduate students. Third, several departments—for example, Economics—allow students en route to a Ph.D. *in another discipline* to earn a Master's degree. This program is especially noteworthy because it points the way toward a viable system of cross-disciplinary education at the graduate level that does not require reorientation of faculty interests or realignment of departmental boundaries. Because of the flexibility that model affords, we strongly encourage other departments to consider instituting Master's programs for students in other departments.

It is time, too, for Stanford to investigate further opportunities for Master's programs that are not tied to any one department, and that not only cross departmental boundaries, but provide opportunities for integrated, interdisciplinary study. Although such programs are difficult to design and administer, we believe their potential educational value to the University as well as to the participating students is sufficiently great to justify the extra effort they require. This model has not been sufficiently explored at Stanford; but it has been successfully implemented at the University of Chicago, which set up an interdisciplinary Master's program for the following reasons:

> There is a growing uncertainty over educational objectives and a lack of self-sufficiency felt in any given discipline. . . . Our best students tend to question the pursuit of long, highly specialized programs of graduate training when new academic positions to use such training are diminishing in number, and when there is a need for diversity in the acquisition and use of such knowledge.*

Chicago's response, its Divisional Master's Program in the Social Sciences has an excellent record of attracting competent students and training them effectively in several interdisciplinary areas.

Well-planned interdisciplinary Master's programs at Stanford could meet similar needs with equal success, drawing as Chicago does on areas of particular strength throughout the University.†

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* The University of Chicago Announces an Interdisciplinary Approach to the Social Sciences" (see Appendix IX-4).

† The new Master's program in Health Services Administration (announced in *Campus Report*, May 3, 1972), which is to involve the Schools of Medicine, Business, Engineering, and Humanities and Sciences, is a striking anticipation of this recommendation.

At both the graduate and undergraduate levels, the University has already had experience with the type of innovative program we have in mind: the undergraduate Human Biology major, the graduate program in Educational Administration (which is sponsored jointly by the Schools of Education and Business), the Latin American Studies program, are examples; the Graduate Special program is another.

At Chicago, a "Divisional Master's Committee" administers standards for programs leading to Master's degrees in such interdisciplinary areas as Urban Studies, The Individual and Society, Cross-Cultural Problems, and Communication. Faculty teams wishing to institute new programs present curriculum proposals to this committee for approval. This model has the virtue of enabling interested and experienced faculty members to coordinate and monitor interdisciplinary programs in an economical and uncumbersome fashion.

At Stanford, the Committee on Graduate Studies might play a similar role. We recommend that:

> 1B. *The Committee on Graduate Studies shall assume an active role in support of increased opportunities for interdisciplinary Master's programs.*

The University of Chicago's approach suggests that the Committee might set general standards for interdisciplinary programs, including their aims, courses, admissions, and degree requirements. Then, faculty interested in organizing interdisciplinary Master's programs might work with the Committee and the Deans of the Schools involved to ensure compliance with those standards, prior to submitting their proposals to the Senate for approval.

Interdisciplinary Master's programs would offer unique opportunities at Stanford for faculty members already engaged in exploring new fields of study. Numerous members of the faculty are becoming increasingly involved with interdisciplinary research projects in such areas as transportation planning, health-care delivery systems, and community development. Faculty members engaged in such projects should consider whether their work might not offer fruitful opportunities for interdisciplinary research at the Master's level. Master's programs in these areas might attract precisely those kinds of students who could bring relevant experience to the program and diversity to the student body. Assuming sufficient duration of current interdisciplinary research projects, sufficient richness and depth in supporting course offerings, and sustained student and faculty interest, Master's programs in these areas might well serve as models for other interdisciplinary Master's programs.

RECOMMENDATION 2: PART-TIME STUDY, DELAYED ADMISSIONS, INTERRUPTED STUDY

Part-time Study

We noted earlier that the discouragement of part-time study barred many talented men and women with family and employment responsibilities from graduate education at Stanford. It also inhibits departments that want to increase their enrollment of women graduate students, or that want a graduate student population of more diverse backgrounds and ages.

Current University policy permits certain groups—e.g., members of the Stanford staff and Honors Cooperative program students—to enroll as part-time students, and to pay fees on a per-unit basis when registered in regular departments or programs.* But for everyone else current policy requires study on either a half-time (i.e., eight units or less) or full-time (more than eight units) basis. For many potential students, even half-time study represents either too heavy an academic load or too onerous a financial commitment. We believe that the status accorded to the groups listed above should be extended to other, equally deserving groups.

Our recommendations for expanded opportunities for highly qualified part-time students contemplate limited numbers of students whose study plans coincide with the resources of individual departments. We agree with President Lyman that

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* Under the Honors Cooperative program, employees of local companies receive full salary but are released from work for regular classes at Stanford in Engineering and the Physical Sciences. For a more detailed description of this program, see Appendix VIII-2.

"there remains value in the total immersion of the student in the University."[*] Indeed, our recommendations for part-time study (outlined below) provide for at least one year of full-time residency as a requirement for the Ph.D. Departments must recognize, however, that a "full-time only" policy will prevent them from increasing the number of women enrolled in their graduate program and from diversifying their student body. Some departments—notably Art—have already admitted a handful of less-than-half-time students; their reported success should offer encouragement to other departments.

Our recommendations distinguish between entering students who wish to begin graduate study on a part-time basis and matriculated students who require part-time study for a limited period of time. Individual departments are in a position to exercise stringent controls over both groups: they can limit the number of part-time students; they can establish admissions standards that require part-time students to be the intellectual equals of full-time students; and they can require detailed plans of study and concise statements of student need for part-time status.[†] We would stress the importance of planning, both by the student and by the department, for part-time study:

> 2A. *Applicants for admission on a part-time basis must submit detailed plans of study, which, before admission is final, must be approved by the student's prospective adviser and, where appropriate, by other members of the department (such as the DGS).*

All part-time students will, of course, be required to fulfill University residency requirements. In addition, we believe that sensible limits should be imposed on the length of part-time study. One of the most salient objections to part-time study we have encountered is that it will only lengthen the time to degree—a period which, as other SGES committees have noted, is in most cases already too long. Part-time study will indeed extend the student's period of graduate study, but we believe this disadvantage can be mitigated by requiring specific aspects of the graduate curriculum to be completed in specific periods of time:

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[*] Address to Stanford Volunteer Leadership Conference, September 24, 1971.

[†] Departments may wish, for example, to require applicants to submit a separate enclosure with their applications stating whether they wish to study on a full-time or part-time basis. Having set a quota for part-time students, departments may first review applications, decide which applicants they want to accept, and only then refer to the enclosure suggested above. This may prove a convenient way to ensure that part-time students meet the same high standards for admission as full-time students.

> 2B. *Students who matriculate as part-time students must complete all the requirements for the Master's degree (or the departmental equivalent) by the end of their ninth quarter. Students who enter with a Master's degree must complete Ph.D. course work within nine academic quarters. All students who enter Ph.D. programs must complete one year of full-time residency at Stanford, preferably during one of the research years.*

Some of these restrictions may, in exceptional circumstances, be modified or waived. We would emphasize, however, that part-time status is recommended for students who can *plan* the course of their graduate training, and we believe they should be prepared to plan for one year of full-time study as part of Ph.D. training.

Tuition and Financial Aid. We have assumed that tuition for part-time students will be charged on a per-unit basis. In general, we do not recommend that part-time students be given fellowship support, unless the department to which the student applies believes that extraordinary circumstances and qualifications warrant an exception. We would, on the other hand, recommend that part-time students have access to University and outside loan funds for which they qualify. We further recommend that:

> 2C. *Students who matriculate on a part-time basis should be eligible for fellowship support during the required one-year residency; in the allotment of such aid, they should be treated on an equal footing with full-time students.*

Departments that choose to admit part-time students should plan on one year of fellowship support for each part-time student who completes the program.

The number of part-time students a department can admit will depend on such disparate factors as laboratory space, the availability of equipment, and the timing of course offerings. As we have recommended above, departments that choose to admit part-time students should do so in a limited way at first, with decisions to allow larger numbers of part-time students based on additional experience.

Delayed Admissions

In discussing Master's programs above, we noted that a major cause of attrition in doctoral programs is shifting interests or career plans on the part of students. As a recent report on higher education suggests, success in a discipline as an undergraduate, coupled with encouragement from teachers and ample fellowship aid, has allowed some students to "glide past" career choices while enrolling in doctoral programs.[*] Present limitations on fellowship support and graduate enrollments mean that departments can ill afford to admit students who are unsure of their commitment to a discipline, and that many students are forced to amass loans for study that does not lead to a career in the discipline. We therefore recommend that:

> 2D. *Departments shall consider allowing a limited number of applicants to defer matriculation for one year.*[†]

Departments probably will not wish to grant this option to more than 5 or 10 per cent of the applicants who seek it. We do not intend departments to require students to enter on this basis, nor would we recommend this policy for students who have not completed departmental admissions requirements. This policy is intended primarily to allow students who, under present conditions, cannot be given fellowship support to spend a year accumulating savings for graduate school, while enabling them to apply directly from their undergraduate institution so they can contact faculty for recommendations, etc. This is already the informal practice of many departments. Delayed admission is often and appropriately granted to students who hold fellowships for overseas study or special projects. We recommend that departments include a statement of their policy on delayed admissions in the Departmental Programs sent to applicants, emphasizing that this option is available to only a limited number of applicants. We believe that the kind of student for whom this option is intended will recognize its advantages. Departments that accept our recommendation should, of course, plan fellowship support to accommodate students entering under this option.

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[*] Frank Newman *et al.*, *Report on Higher Education*, to the Secretary, Department of Health, Education, and Welfare, March 1971.

[†] This recommendation substantially coincides with Recommendation 7 of the Committee on Financial Aid.

Interrupted Study

Although many departments already make informal provision for interrupted study, in too many cases, we have found, students leave graduate school because of temporary if serious personal problems, and never return. We believe this distressing situation can be improved by the adoption of a series of University-wide, publicly known provisions for interrupted study. This recommendation is also directed at a problem faced by many departments: from time to time, students who have left graduate programs return to the University to continue their studies after lapses that can run as long as ten years. Our recommendation, then, is intended to encourage leaves of absence for valid personal reasons on the one hand, and to limit interruptions of study to a stipulated period of time on the other.

> 2E. *The University shall adopt general, departmentally administered, provisions for interrupted study. Students who wish to take leaves of absence will, in consultation with appropriate members of their department (in particular, their adviser and the DGS), submit to the department and to the Dean of Graduate Studies (1) a complete statement of reasons for requesting a leave of absence; (2) expected date of return; (3) a statement of the student's progress at the time the leave will take effect. The department will supply a statement of (1) the terms of the fellowship support (if any) guaranteed to the student on his return at the stipulated time; and (2) any other provisions or guarantees the department and the student may find appropriate.*

In general, we view pregnancy, protracted illness, and military service as routine reasons for leaves of absence. Other reasons should be carefully reviewed by the department. We are not interested in restricting departments or students; rather we are interested in encouraging departments to reach mutually binding agreements with students who request a leave of absence so that both the department and the student know where they stand. In general, we believe that leaves of absence should not be granted for periods of more than two years, although rare exceptions should doubtless be made.

RECOMMENDATION 3: MORE FLEXIBLE ACCESS TO NON-DEGREE PROGRAMS

As we have noted earlier, the University has at present two programs for men and women who wish to do graduate-level work but for one reason or another are not prepared to enroll in regular graduate programs: the graduate-at-large program, which allows one year of study for Stanford A.B.-holders in good standing, and non-matriculated student status, which serves summer visitors, visiting scholars, and others, primarily in the University community. Thus the University has already devised opportunities for non-degree-oriented work at the graduate level. Our recommendation is directed toward providing greater access to the latter program—non-matriculated study—on a limited, trial basis.

Several groups have been considered in formulating this recommendation, prominent among which are Stanford staff (see Appendix IX-6) and spouses, who at present are permitted only to audit courses, unless, of course, they enter regular graduate programs. But we have also considered two additional groups: first, visiting fellows from the faculties of predominantly Black colleges (in the program mentioned earlier and described in Appendix IX-3), and second, participants in the Open Fellows program (described in Appendix IX-5). Because of the University's current financial situation, we recommend that these two programs be given high priority for outside funding. The heterogeneity and high caliber of the men and women these programs would bring to Stanford would enrich the graduate experience of all students, as well as the community as a whole.

Many students who enter the Graduate Division as non-matriculated students may subsequently wish to enroll in regular graduate programs as either full-time or part-time students. Indeed, we anticipate that this will often be the case, and for this reason, among others, we believe non-matriculated graduate student status should be limited to men and women whose academic qualifications are equal to those of other graduate students:

> 3A. *Applicants for non-matriculated graduate student status shall be accepted on the basis of present admissions requirements: results of the Graduate Record Examination, letters of recommendation, detailed statements of purpose, and evidence (e.g., transcripts of undergraduate work) of ability and preparation to do graduate work.*

This recommendation is intended to offer a means for those who have been away from formal study for several years both to participate, in a limited way, in the work of the University, and to determine whether they are prepared for, or seriously interested in, formal graduate training. Some of those who go on to enter regular graduate programs will quite properly choose to do so elsewhere.

This recommendation is also applicable to women who have already enrolled in a regular graduate program elsewhere, but whose family responsibilities bring them to this area. A limited term of non-matriculated study can enable these students to fulfill requirements at their home institution or, in some cases, to demonstrate their qualifications for admission to a regular graduate program at Stanford.

We emphasize again, students who enter alternative programs should do so on a clearly limited basis:

> 3B. *Non-matriculated students shall be selected by the Dean of Graduate Studies for a period not to exceed two years. Students entering under this program shall submit a review of their work at the end of each year. They may apply for a renewal of their status at the end of the period for which they were admitted.*

If students entering under this program should seek admission to regular graduate programs, their records shall, of course, be evaluated by the department to which they apply. It should be made clear to applicants for non-matriculated status that acceptance as a non-matriculated graduate student in no way guarantees subsequent admission to a department, and that course work taken by a non-matriculated student may not be accepted as partial fulfillment of departmental degree requirements. We assume that non-matriculated students will be permitted to pay tuition on a per-unit basis, although the University may wish to add a small fee for administrative overhead. Should non-matriculated students later enter regular graduate programs, they will, of course, be subject to the University's normal residency requirements.

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CHAPTER X

Special Topics

At various points in our deliberations, our attention was drawn to topics that required either special expertise, special interests, or both. On several of these we asked interested and informed persons to prepare position papers for us. We encouraged the groups formed in response to our requests (they ranged in size from one member to six) to roam freely in discussing their topics, and we made little effort to ensure consensus between their thinking and our own. What we wanted primarily was their forthright views. In this chapter we summarize briefly the various topics we asked people to take up, and present some of their suggestions.

On the question of minority problems in graduate education, we solicited ideas from a large number of concerned faculty and staff. Their responses were funneled through a subgroup consisting of Thom Rhue, Assistant Dean of Graduate Studies, and Felix Gutiérrez, graduate student in Communication. The consensus of this task force was that minority problems in graduate education were best discussed in the context of specific recommendations in the main body of our report, rather than separately. Accordingly, we have incorporated their suggestions at various points in our report, notably in Chapters II, VIII, and IX.

Michael Wigodsky of Classics wrote a short paper on the role of the library (especially the proposed new library) in graduate education. We encouraged him to forward his suggestions to the Academic Council's Committee on Libraries, where we felt they would bear the most fruit.

On the issue of foreign graduate students, we asked Lee Zeigler, Director of Bechtel International Center, to prepare some suggestions for us. His thoughtful comments are included as Appendix X-1. Unfortunately, although everyone agrees that thorny issues are raised by the presence of large numbers of foreign graduate students, no one is certain how to tackle these issues. Zeigler's report, like the report of our Committee on Alternative Programs, emphasizes that Stanford's heavy concentration on Ph.D. programs leaves some of our students in the lurch. Many foreign students want only a Master's degree. Their home countries want the student to obtain only a Master's degree. These students are frustrated by programs that either emphasize the Ph.D. or offer no other degree. Additionally, foreign students call special attention to the need for more interdisciplinary programs oriented toward applied research. Esoteric specialties are of little value to many of them. We are not arguing for a shift in orientation simply to meet the special needs of foreign students, but note that many of the recommendations in Chapter IX, particularly those dealing with expanded A.M. programs, respond to the problems of foreign students as well as others.

The Task Force on Women, chaired by Marlaine Katz, Research Associate in Education, included Sandra Bem, Assistant Professor of Psychology; Jean Blumen, Postdoctoral Fellow in Sociology; Anne K. Mellor, Assistant Professor of English; Judith Pool, Senior Research Associate in Hematology; and Martha Sloan, Graduate Student in Education and Engineering.

The Study found itself in broad agreement with the spirit of the Task Force on Women's recommendations. While the agreement "in principle" was unanimous, reservations were expressed about some of the detailed recommendations. In particular, the assignment of a wide variety of functions and powers to one administrative officer as suggested in the task force's recommendation for an Associate Provost, caused deep concern. Accordingly, we include here a short list of the major recommendations with which there was unanimous and unreserved agreement. Because there was disagreement on some of the recommendations and the proposals for detailed implementation, we attach the entire report as Appendix X-2, and briefly discuss here some of our reservations. This discussion should not, however, obscure the fact that we support the following recommendations:

> 1. *Steps shall be taken both by the University and by departments having fewer than 40 per cent female graduate students to increase applications from women.*
>
> 2. *Steps shall be taken in all departments to provide special assistance to female graduate students in finding jobs after graduation.*

We note that several recommendations of our Committee on Assessment and Reporting deal with openness in job listings, central coordination of job placement, etc. These proposals, too, would broaden placement opportunities for women, a goal we share with the Task Force on Women.

Finally, we support the following recommendation:

> 3. *Steps shall be taken that will significantly increase the number of women on the faculty.*

The report of the task force includes a number of concrete suggestions for implementing these proposals. We list a few of our reservations about some of these. The goal of 40–60 per cent female representation on the faculty may be a realistic long-term goal in some departments. But it strikes some of us as an inappropriate use of quotas, and all of us as unrealistic for other departments for the foreseeable future. At the projected rate of faculty turnover, many departments, even if they filled every new opening with a woman (a strategy few could accept), would not reach such percentages in the next twenty years. Similarly, the proposal to eliminate age information on applications for graduate study seems both unrealistic and probably unwise. Transcripts, to take only the most obvious source, almost always contain birth dates, or at least graduation dates. Moreover, several programs *favor* the admission of older students, and need the information on age to achieve the very goals the task force wishes to promote. This does not mean we favor arbitrary age limits on admissions, as we have made clear in Chapter IV. Part-time study, another issue of considerable importance to women, is discussed at some length in Chapter IX. We note here that the recommendations in Chapter IX preclude fellowship aid for part-time study.

These caveats are not meant to detract from our basic conviction—that the report of the Task Force on Women merits serious consideration, and that we wholeheartedly support the three recommendations listed above.

Another issue on which we sought advice was the general role of postdoctoral fellows in the University. One response is the position paper by A. E. Siegman of Electrical Engineering and Sidney Drell and David Leith of SLAC attached as Appendix X-3. Their paper suggests that academic departments should consider ways in which postdoctoral fellows and research associates might participate more broadly in the total academic program, in addition to the research functions they already perform. They warn, however, that insofar as postdoctoral researchers are paid out of research-committed funds, the extent to which their efforts can be drawn upon for other purposes must necessarily be limited.

A different approach to the role of postdoctoral fellows in the University is taken by the Committee on the Ph.D. Dissertation and Alternative Degrees, which recommends the creation of post-doctoral fellowships in the Humanities.

The final problem on which we asked a special task force to report was the issue of graduate student participation in decision-making. The report of this task force, which consisted of Ed Hayes, Graduate Student in Law; Cissie Bonini, Graduate Student in History; and Luther Nussbaum, Graduate Student in Business, is attached as Appendix X-4. Once again, we find ourselves in broad agreement with the intent of the report's recommendations. We note, in fact, that they coincide in many respects with those of our Committee on Assessment and Reporting. Especially relevant here are Recommendation 2 of that committee's report, and the discussion following Recommendation 3. In particular, we would emphasize the need for clear, public indications of which departmental committees graduate students may sit on, how they are to be selected, and their precise prerogatives as members of those committees.

Finally, we see great merit in the task force's third recommendation, i.e., that graduate students be involved more systematically in policy decisions at the University level that affect graduate students. We point out, however, that the diversity of such decisions, as well as the difficulty of establishing a truly representative student opinion on a University-wide issue, makes this recommendation an extremely difficult one to implement. Our hope is that the Graduate Student Association will take it upon itself to work closely with the Dean of Graduate Studies on this matter.

CHAPTER XI

Departmental Visitation Teams

Our charge asks us to "implement a project to study graduate programs in the departments, using departmental visitation teams." The nature and goals of the visits are best described by quoting from the report of the Task Force for the Study of Graduate Education, which recommended that a program of such visits be undertaken:

> A class of problems not covered by the topic committees is made up of those issues which we feel are best attacked at the department level. We believe that the department will continue to be the primary unit at which graduate education is defined, and any important changes in graduate education will have to take account of that fact. . . .
>
> It is often difficult for a group to perceive all of the ways in which they might change, to see ways in which their structures may be responding more to the problems of a decade ago than those of today. In particular, there are inherent difficulties in a department trying to evaluate the success of its own graduate program. . . . A small team [will] make a site visit to that department, studying in detail its whole graduate program, and making recommendations to and with the department about ways in which the program might change.
>
> Accordingly, we suggest that the Steering Committee appoint a small team to study any particular department. [This] team would spend approximately one week in an intensive study of the graduate program of the department. . . . At the end of this week, the Visitation Team would prepare a written report about the department's program with recommendations for possible change.

We have carried out three such site visits, to the Anthropology, Spanish and Portuguese, and English departments.[*]

The procedures used to carry out the site visits varied to some degree with the preferences and the size of the department visited. Since none of the site-visit teams had more than six members, the largest department visited—English—could not be investigated as thoroughly as the others.

In all three cases we interviewed as many faculty and students as possible. This typically proved to be twelve or fourteen faculty members and a like number of students. During the Anthropology and Spanish and Portuguese site visits, all faculty currently in residence and a majority of the graduate students in residence were interviewed. In all three cases a random sample was taken to ensure an unbiased selection of students from each year in the program, and to this list was added the names of a few additional students who volunteered to talk with site-visit team members about their department, or who were suggested to us by faculty members or other graduate students. Typically, interviews were carried out by two-person interview teams (consisting of one faculty member and one student), and were followed up by a joint session between most members of the Visitation Team and the Chairman of the department.

Conclusions drawn by the Visitation Team were based primarily on impressions received in these interviews, and to a certain extent on other data (e.g., statistics on attrition and time-to-degree over the past several years within the department, obtained either from the department or from the SGES staff).

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[*] The membership of the Visitation Teams was as follows. *Anthropology*: Ernest R. Hilgard, Professor of Psychology and Education, Emeritus, Chairman; J. Merrill Carlsmith, Associate Professor of Psychology and Fellow of the University, Director, SGES; Roy Childs, Graduate Student in Sociology, Staff Director, SGES; Alex Inkeles, Margaret Jacks Professor of Education, and, by courtesy, Sociology; Dennis Matthies, Graduate Student in Philosophy and Humanities; Inger Sagatun, Graduate Student in Sociology. *Spanish and Portuguese*: Herbert Lindenberger, Avalon Professor of Humanities and English, Chairman; J. Merrill Carlsmith; William Chace, Assistant Professor of English; Roy Childs; Felix Gutiérrez, Graduate Student in Communication; Roland Simon, Graduate Student in French. *English*: Sidney D. Drell, Professor and Deputy Director, SLAC, Chairman; Roy Childs; A. Peter Foulkes, Associate Professor of German, Associate Dean of Humanities and Sciences; Stanley Levine, Graduate Student in French; Andrea G. Mattson, Graduate Student in German Studies; Peter Stansky, Associate Professor of History.

We have come to several conclusions about such site visits. First, the visits demand a substantial amount of time and effort on the part of the visitors. Indeed, one reason we did not have more such visits was the difficulty in recruiting people to serve on the teams. Second, every member of all three Visitation Teams felt he had learned a great deal from the experience. Indeed, Professor Hilgard, chairman of the team visiting Anthropology, writes: "It was perhaps more valuable to the reviewing committee than to the Department." It is difficult to assess the impact of such learning, but we think it probably will prove substantial. Third, the departments profited just from the announcement that the visit was to take place. In one department visited, a series of meetings was held to discuss the graduate program, to draft a new constitution for the department, to consider new graduate requirements, and so forth—all *before* the visitors' report was completed. Finally, and this will hardly surprise veterans of other investigatory committees, response to the visitors' formal report may be procrastination unless further pressure is applied.

Anthropology is the only department that has had a reasonable length of time to consider the report. Although the department evinced much excitement when the report was issued last fall, to date little action seems to have resulted from its recommendations. The Chairman reports that the Committee on Higher Degrees is now actively debating the issues raised by the report. "Indeed," he continues, "much of the impetus for our reevaluation of our graduate program can be traced to the report of the Departmental Visitation Team." It is too early to tell what the response of the two other departments visited will be, but we note with approval that the report of the Visitation Team to Spanish and Portuguese (which includes a great many recommendations for change) requests the Chairman to report to the Dean of Humanities and Sciences and the Dean of Graduate Studies within one year on the department's response to the report's recommendations.

The reports themselves are impressive documents. In each case they seem to us to reflect an appreciation of the department's goals and traditions and at the same time offer a fresh viewpoint on how the department is meeting its goals. The Task Force considered and rejected the option of a visiting committee comprised of experts from other universities in the discipline being studied. The reports of such outside visiting teams—and we have looked at several that were done for departments both here and elsewhere—tend to concentrate on the faculty and the research being conducted in the visited departments, and give little attention to the details of the graduate program. For our purposes, therefore, such reports, though extremely valuable in other ways, would be of little use. Our soundings confirmed the surmise of the Task Force that there was "often more similarity between programs in the same field at different institutions than in different fields in the same institution."

One of the most fruitful results of these site visits, we found, was the uncovering of conflicting opinions within the departments visited on various aspects of their graduate program. Three excerpts from the visitors' reports will illustrate this point:

> Evaluation procedures were foremost in the minds of the graduate students, especially as a result of a recent sudden termination of three students. . . . There seems to be a continuing wide discrepancy between the perception of the faculty about what happened this spring and the perception of many of the students, especially those who were negatively evaluated. Until greater agreement as to what has happened and what will happen is reached, there is potential for continuing friction and disagreement.

> The uncertainty among students about the nature of the field and of . . . research is reflected on a practical level through their uncertainty about what precisely the requirements in the program are. The students we interviewed had very little to say about the comprehensive exam or the dissertation. The general attitude was that they would meet each problem when they came to it.

> On the face of it, such democratic procedure would appear to guarantee a smoothness of operation and an absence of academic arbitrariness. In practice, however, the departmental manner of making decisions raises several fundamental and interesting questions. Some of these questions are basic to the very appropriateness of democratic

procedures to academic policymaking, and sensitive though these issues are, we feel they should be tackled openly and thoroughly. To put the matter bluntly, should the department change its requirements . . . by a vote with attendant lobbying and student representation, or should it seek to develop an inner and compelling academic logic, intrinsic to the general discipline, as justification for its actions or non-actions? The one does not of necessity exclude the other, but it is precisely this logic intrinsic to a defined discipline that some of us found to be lacking in the department.

Recommendations were also directed to defining areas that needed careful study by the department. For example:

> Clear standards for progressing through the program should be established, distributed, and enforced. These standards should carefully reflect the larger aims of the graduate program. The requirements should include a precise timetable to allow for completion of the program within a reasonable time.
>
> They should consider offering a little more ethnography in year 1, along with all the theory courses, so that students (especially those with weak backgrounds in anthropology) have more to tie theory to.
>
> They need to be clearer and more explicit on how and when students are evaluated. Students who are likely to be in trouble at evaluation time should be told of this a few months in advance.
>
> Needless to say, a reduction in the tensions prevailing among a number of faculty members will also help in student-faculty relations. In addition, an effort should be made to see that all faculty members regularly keep their office hours.
>
> The Department should discuss its language requirements . . . and should attempt to reach some agreement as to the relationship of these requirements to the hypothetical degree program, indicating how much time a graduate student without such preparation is to be expected to devote to the acquisition of proficiency in foreign languages. If the requirement . . . is retained, the Department should be prepared to argue the academic merits of its decision, both for the benefit of skeptical students and in order to convince itself that there is an inner logic underlying the structure of the program.
>
> Increased opportunities for tutorials and independent work. Students should not need to feel, as they do at present, that they have to take traditional "content" courses to prepare for their examinations, and the Department need not feel it has to list courses regularly that run the whole gamut. . . . Rather, it should consider ways of encouraging

students to work up certain areas by means of reading courses and tutorials. With sufficient methodological tools students should be able to play a more active role in their education than they have up to now. Given the small number of students involved, the Department's current attempt to man a large number of courses seems an expensive and unnecessary burden to an already overburdened faculty.

The chairmen of the three Visitation Teams are unanimous in their belief that more such visits should be made in the future. Professor Hilgard says, "My impression is that . . . the visitors could help hold a mirror up to the Department to see how well it was doing what it intended to do. . . . This would be a very helpful thing for the Study of Graduate Education to do for and with a number of other departments." Professor Lindenberger says, "I am writing to express my hope that [these visits] will continue on a regular basis. If there is any way of continuing it this spring . . . some of us who have participated thus far would be willing to do a little more work. . . . Nothing will help bring about such improvements as quickly as visits of the kind we have been conducting." Professor Drell says, "A visiting committee can serve as a catalyst, through the individual interviews, for expressions of concern about potential problems and about present problems resulting from different goals or perceptions of the separate communities—viz., students, junior faculty, and senior professors—within a department. In our particular visit, for example, we found sharply differing views between faculty and students about the dangers and opportunities arising from the recent liberalization of the curriculum and requirements. These views lent themselves well to discussion with an outside party, and their expression heightened awareness of an important problem."

Given the time and effort required, a heavy schedule of such visits would not be feasible. The visits have proved to be so valuable, however, in bringing departments a fresh, independent view of their programs and in increasing information throughout the University about the nature of graduate education, that we recommend:

1. *The Committee on Graduate Studies shall continue the Departmental Visitation Teams on the model developed by SGES. Such visits shall take place at the rate of three or four a year. Each Visitation Team should consist of two or three faculty members and two or three graduate students, primarily from fields closely related to the department to be visited. Recommendations should include provision for follow-up by either the Committee on Graduate Studies or the appropriate Deans.*

We see many valuable suggestions in the reports of the three visitation teams we have had to date, as well as some the department in question would probably be right to reject. Our recommendation for a follow-up inquiry accords with the general principle, expressed throughout this report, that departments should do what seems best to them, but are accountable to the University for what they do. In the long run, however, we believe that the greatest value of the visits will prove to lie not in their facilitation of bureaucratic accountability, but in their encouragement of a high level of intellectual interchange throughout the University.

CHAPTER XII

Implementation

Throughout the existence of the Study, and in particular while framing our formal recommendations, we have tried to bear in mind what implementing our suggestions would require of faculty and students. As we have emphasized throughout this report, we have tried to propose regulations that are applicable to all departments, but reserve the right of departments to deviate from these regulations when they can present a persuasive case for doing so.

One instinctive response to our recommendations probably will be dismay at the increase they portend in bureaucracy and paper work. Although such a reaction is understandable, we believe it is inappropriate for several reasons. Inappropriate first of all because it is precisely an increased flow of information that is crucial to an improvement in our graduate programs, whether it is from the department to the student about the nature of the dissertation, from the student to the department about his plans, expectations, and accomplishments, from the department to the Dean about the progress of its students, or from the department to the student about his progress. Second, improved communications with respect to the nature of our graduate programs cannot help but improve the quality of our future graduate students, increase the students' satisfaction with their programs and the faculty's satisfaction with their students, and help us all come to some shared understanding of where we are and where we should be going. Finally, we are prepared to argue that the centralized record-keeping procedures we suggest will, after an initial period of adjustment, conserve more time than they consume. Departments that routinely maintain the essentially simple records we have called for will not have to spend countless hours, as they do at present, in frenzied and often futile efforts to retrieve information from fading recollections and chaotic files.

So far as the ultimate implementation of our recommendations is concerned, we regard Geology's response as exemplary. Partly as a result of the participation of several members of the department in the Study, partly in response to a talk by the Director of the Study, and partly because of initiatives within the department, Geology recently instituted—before our report was completed—a new program of graduate education that closely conforms to our recommendations. To the other departments we can only say, Go and do likewise. For the laggards, we offer the following summary.

SUMMARY OF RECOMMENDATIONS

Recommendations preceded by a heavy dot are legislative proposals to be acted upon by the Senate.

CHAPTER IV The Four-Year Ph.D.

• 1. Every department shall present to the Committee on Graduate Studies a clear timetable for the expected progress of its students, showing how the normal student will progress to the Ph.D. in a total of four years. Timetables requiring more than four years shall be subject to the approval of the Committee.

2. Each department should restudy its requirements for admissions. In general, time in graduate school should not be devoted to remedial work at an undergraduate level. Thus all or most basic work in languages (both foreign and computer) and mathematics should be completed before matriculation in graduate school.

3. Each department shall consider offering delayed admission to students who have valid reasons for postponing graduate work, and conditional admission for otherwise well-qualified students with a specific deficiency in preparation.

CHAPTER V Assessment and Reporting

• 1. Every department with a doctoral program shall have a Director of Graduate Studies (DGS).

• 2. Every department shall have student members on its committee on graduate studies. Student members might also appropriately be appointed to other committees dealing with aspects of graduate education and departmental governance.

3. Every department shall publish a Departmental Program of Graduate Study. The Program will be a compendium of information on graduate study in the department, including philosophy, objectives, prerequisites, requirements, and examinations. The Program should include a summary timetable of a normal program of study for the Ph.D.

4. Every department should make available to the Office of Graduate Admissions copies of the Departmental Program (possibly in an amended version) for distribution to prospective applicants.

• 5. Every incoming graduate student shall be assigned a faculty member who will act as his general adviser for his first year of graduate study and thereafter until his acceptance by a research adviser. The duties of the general adviser include explanation of University and departmental procedures and regulations, guidance in planning a course of study, responsibility for keeping the student's records, representation of the student's views in the councils of the department, and assistance in finding a research adviser and a source of research support when such assistance is desired.

6. Every department shall organize an orientation program for first-year graduate students.

7. One or more members of the department shall be specifically designated to be a resource in advising students with special problems or situations, such as foreign students, minority students, part-time students, students with writing or language problems, students with deficient or unconventional backgrounds.

8. The Chairman of each department shall designate a faculty or staff member as Placement Coordinator. He shall collect and make available to students information gained formally and informally about job openings. He shall also serve as the department's liaison with the Placement Center and prospective employers.

• 9. An adviser shall receive from each advisee in the Spring Quarter an annual written statement containing the advisee's assessment of his progress during the preceding year and his plans for the forthcoming year.

• 10. The adviser shall prepare annually in the Spring Quarter a written report for each of his advisees, reviewing his record and accomplishment for the preceding year. This report should be included in the student's departmental file.

11. Every department shall establish a grading policy for the graduate courses in that department. That policy, with a description of its application, shall appear in the Departmental Program.

• 12. Each department shall establish procedures for qualifying students for the Ph.D. These procedures shall be published in the Departmental Program of Graduate Study. As a result of the qualification procedure, a student shall be either (1) qualified for the Ph.D. or (2) explicitly terminated. In reaching the latter decision, departments shall follow the procedural guidelines set down in Recommendation 24.

• 13. The decision on qualification shall be made by the entire department faculty, or by a committee acting on behalf of the entire faculty.

• 14. "Qualification for the Ph.D." should be considered synonymous with "Recommendation for Admission to Candidacy." The outcome of the qualification procedure shall be (1) admission to candidacy, or (2) termination. The department shall inform the Graduate Division Office of "qualification" by submission of the "Application for Admission to Candidacy for the Degree of Doctor of Philosophy" (Green Sheet). The Green Sheet shall be revised to reflect its new function.

• 15. Admission to candidacy should imply that the student's position in his department is secure, subject only to continued satisfactory progress toward completion of remaining departmental and University requirements. Unfulfilled requirements should be recorded on the "Application for Admission to Candidacy for the Degree of Doctor of Philosophy" (Green Sheet).

• 16. It should be the exceptional case that a student previously admitted to candidacy is terminated for academic reasons. Such exceptional termination proceedings shall follow the guidelines set down in Recommendation 25.

• 17. Departments should be direct in terminating students whom they consider unqualified. Denial or removal of financial aid should not be used as an indirect mechanism for terminating such students. All terminations shall be explicitly in accord with the guidelines set forth in Recommendations 24 and 25. Department faculties, the Committee on Graduate Studies, and the Dean of Graduate Studies must remain vigilant lest financial aid be used in place of recommended procedures as a means of termination.

• 18. The qualification procedure will take place during the student's first two years of full-time study in a doctoral program at Stanford. A student who has not been admitted to candidacy will not be permitted to register for his third year. Any exception to this regulation must be approved in advance by the Dean of Graduate Studies.

• 19. The department shall make a diagnostic evaluation of every student at the end of the first year of study if he has not yet been qualified for the Ph.D. The written report of this diagnosis, which is intended to assist students in preparing for qualification in the second year, shall be prepared by the department (or a departmental committee) and transmitted to the student by his adviser.

• 20. Candidacy shall expire after five years. Upon expiration of a student's candidacy, the department shall either recommend renewal of candidacy or initiate termination proceedings as described in Recommendation 25. If neither action is completed by the date of expiration of candidacy, candidacy shall be renewed by the Dean of Graduate Studies for one year, during which the department must either recommend renewal or terminate the student.

• 21. At some point during each student's Ph.D. candidacy there shall be a university oral examination of the student's scholarly attainments. The procedure governing the examination shall be determined by the department, but the examination must be open to attendance by any member of the Academic Council. The examination, including some indication of its topic, shall be announced in advance in an appropriate University publication.

• 22. The chairman of the examining committee for the University oral shall normally be a member of the Academic Council from outside the student's department, appointed by the Dean of Graduate Studies. The chairman shall preside over the examination in accordance with the procedures established by the department, and shall vote in the examination if those procedures so provide. He shall report both the results of the vote and his own assessment of the examination to the Dean of Graduate Studies. A copy of his report shall be sent to the Chairman of the student's department.

• 23. Each department shall be free to establish procedures, including voting eligibility, for the university oral examination of its own students within the following constraints:

(a) There shall be at least four voting members on the examining committee, plus the outside chairman if the department's rules provide that the chairman shall vote, with a majority of the voting members being members of the Academic Council. The examining committee may include suitable persons from outside the University provided that the student to be examined concurs.

(b) All members of the Academic Council shall be free to attend the examination. The right of attendance by others, including students, shall be governed by departmental procedures.

(c) The examination shall not exceed three hours in duration, of which at least thirty minutes shall be devoted to the student's principal research topic or dissertation.

(d) The examination must follow an established departmental policy, which shall be on file with the Graduate Division and available to students in advance. The participation of graduate students in the formulation of this policy is strongly urged.

(e) The outcome of the examination, as determined by secret ballot, shall normally be either pass or a recommendation to repeat the examination after specified conditions are satisfied. A favorable vote by three-quarters of those qualified to vote (or the next lower whole number if three-quarters is not a whole number) shall be necessary for a pass.

• 24. The Senate should adopt the following procedures for use by departments in determining whether or not to recommend the admission of a student to candidacy, and in other termination proceedings concerning students not yet admitted to candidacy:

(a) The responsible departmental committee* shall review the student's academic record in the department and his performance during the qualification procedure, and then vote. Minutes of the discussion and the vote shall be taken.

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* In most departments the standing committtee on graduate studies will conduct the review described in step (a). If a department does not have such a committee or chooses not to use it, the entire department should simply replace the committee in steps (a), (e), and (f), and step (b) becomes unnecessary.

(b) If a committee has conducted this review, its decision must be approved by a majority vote of the department faculty present. Minutes of the departmental review shall be taken.

(c) In the event of a negative decision, the DGS* or the student's adviser shall, if possible, personally communicate the decision to the student and discuss it with him. The student shall also receive written notification of the department's decision, including the reasons for the denial of candidacy, and the appeal procedure.

(d) A positive decision need be communicated to the student in writing only.

(e) The student shall be given the opportunity to examine his departmental file (including the Minutes of the faculty meetings, and may request reconsideration by the responsible committee, giving his reasons for believing reconsideration is warranted.

(f) The committee may refuse to reconsider. The committee's response to the request for reconsideration shall be written, and shall be included in the student's file.

(g) After a final negative decision at the department level, the student may appeal in writing to the Dean of Graduate Studies. The Dean shall review the petition, the student's departmental file, and the Minutes of the faculty review. A decision by the Dean affirming the departmental refusal to grant candidacy shall be final.

• 25. The Senate should adopt the following procedures for use by departments in terminating students already admitted to candidacy:

(a) When a student admitted to candidacy does not seem to be making reasonable progress toward the degree, his adviser or the DGS may initiate discussions with the student. These discussions should include the student, his adviser, the DGS, and any other faculty members whose participation is appropriate. Minutes shall be taken.

(b) Following these discussions and having requested a written report from each of those involved, the responsible department committee† may issue a warning to the student. The DGS will notify the student in writing of this action. The written notification shall include a summary of the student's academic deficiencies; the steps necessary to correct these deficiencies; and an explicit statement of the time period—in no case shorter than three months—that will be allowed for their correction.

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* In some departments, the Chairman may wish to act in place of the DGS during termination proceedings.

† In most departments the standing committee on graduate studies will conduct steps (b)–(f). If a department does not have such a committee or chooses not to use it, the entire department will conduct steps (b)–(f), and step (g) becomes unnecessary.

(c) At the end of this warning period, the committee may initiate termination proceedings; may issue a renewed or revised warning; or may allow the warning to lapse without further action. If the warning is allowed to lapse, the committee may not undertake termination proceedings except by issuing a new warning following the above procedures.

(d) If at the end of the warning period the committee decides to consider termination, the DGS shall give the student written notification of the impending termination proceedings, including a description of the student's rights during the proceedings.

(e) The student shall have the right to examine his departmental file; to appear at the meeting to hear the entire case against him; and to present his own case against termination, both orally and in writing. Minutes shall be taken.

(f) The committee shall then vote on termination. Minutes shall be taken.

(g) Any decision to terminate a student admitted to candidacy must be approved by a majority vote of the department faculty present.

(h) The DGS shall notify the student in writing of the department's decision. In the event of a negative decision the DGS shall also include the reasons for termination and the appeal procedure open to the student.

(i) The student may appeal to the Dean of Graduate Studies, who shall review the student's file, the Minutes of all relevant meetings, and the documents presented at those meetings.

(j) The Dean shall report his recommendations to the Committee on Graduate Studies. If his decision is for termination, the Committee on Graduate Studies—which originally granted candidacy—must concur. Termination of candidacy by the Committee on Graduate Studies is final.

• 26. The DGS in each department shall send to the Dean of Graduate Studies no later than Registration Day of the Autumn Quarter a list of all graduate students who were pursuing a degree in residence during any part of the previous academic year, listing for each:

(a) Year of graduate matriculation at Stanford;

(b) Number of years of graduate study at Stanford;
(c) Current "status" designation;
(d) An indication whether the student's progress has been "satisfactory" or "unsatisfactory" according to the department's timetable;
(e) Financial aid (kind and amount) for preceding and current year;
(f) Number of years on Stanford fellowship support;
(g) Further comments: e.g., degree awarded, reason for dropping out, nature of unsatisfactory progress, probation, etc.
(h) Student's adviser.
(Students in bona-fide Master's programs should be listed separately from doctoral students.)

• 27. The DGS in each department shall send to the Dean of Graduate Studies no later than Registration Day of the Autumn Quarter a list of all candidates for the Ph.D. who were not in residence during the previous academic year, listing for each:
(a) Year of graduate matriculation at Stanford;
(b) Number of years of graduate study in residence at Stanford;
(c) Year of first admission to candidacy;
(d) Dissertation adviser;
(e) Progress during previous year: none, minimal, satisfactory, good;
(f) Estimated date of completion of Ph.D.
Sections (e) and (f) should be completed on the basis of the adviser's annual report on the student.

28. The departmental file of every graduate student shall contain at least the following:
(a) All information transmitted to the Dean under Recommendations 26 and 27;
(b) Annual report of the student on his progress and plans (Recommendation 9);
(c) Annual report of adviser to student (Recommendation 10);
(d) All correspondence between department Chairman or DGS and the student, and all official correspondence between the adviser and the student;
(e) Results of examinations and qualification procedure.

29. The Dean of Graduate Studies shall submit to the President of the University an Annual Report on the Graduate Division. The

Report will discuss graduate education at Stanford during the previous academic year, and will also treat future developments in graduate education. It should also include the following statistics and some explication of them:

(a) Number of students enrolled by department, degree-objective, sex, minority group, nationality, undergraduate school;

(b) Number of graduate degrees awarded by department;

(c) Length of time to degree during previous year and averaged over previous three years, by department, School, division (Humanities, etc.);

(d) Sources of financial aid, and distribution pattern of aid within the University;

(e) Attrition patterns among graduate students by department and degree. Data for previous year as well as three-year average should be included.

The Annual Report shall periodically include a study of the employment of degree recipients. It shall also periodically include a discussion of employment and funding projections in various general areas of graduate education.

CHAPTER VI The Ph.D. Dissertation and Alternative Degrees

1. Starting in the first year of graduate study, there should be a gradually but steadily growing involvement of the student with his research adviser or advisers in planning and executing original research.

• 2. It should be explicitly recognized that the fundamental goals of the dissertation project—i.e., to serve as the student's supervised apprenticeship in his chosen field, to allow him to demonstrate his mastery of the tools of the trade, and to give him a taste of scholarly accomplishment—can all be fulfilled even if the dissertation does not meet the traditional ideal of being a major contribution to knowledge based on independently designed and executed research. *The scope of the dissertation project should be compatible with an expectation of completion in a year or a year and a half of intense effort, and in less time for the exceptionally lucky or talented student.*

• 3. We recommend that every department prepare its own description of a model dissertation project, submit it to the Committee on Graduate Studies, and include it in the Departmental Program of

Graduate Study recommended elsewhere in this report, as a guide to incoming graduate students.

4. We recommend that a program of postdoctoral fellowships be adopted on a trial basis by departments in the Humanities who find the idea attractive.[*]

CHAPTER VII Graduate Student Teaching

• 1. The training of a student in a doctoral program shall normally include experience in teaching, supervised by a faculty member and evaluated by the student and the faculty member in consultation.

• 2. Every department shall include in its Departmental Program of Graduate Study a description of the opportunities available to those Ph.D. candidates who desire teaching experience, indicating the point in time when such experience is normally acquired.

• 3. Each department's plan for teaching experience for its graduate students shall be included, in the year of adoption, in the department's Annual Report to the President of the University, and subsequent modifications in the department's plan shall be described in the subsequent Annual Reports.

4. The Dean of Graduate Studies shall be responsible for establishing a small library of resource materials on the training of teachers, and for liaison with a member of each department with a view to improving the training of teachers.

5. Videotape equipment shall be made readily available for faculty members or graduate students engaged in teaching.

• 6. The nature and extent of a Ph.D. student's teaching experience shall not be determined by the amount or source of his or her financial support.

• 7. No graduate student shall normally have teaching duties for more than four academic quarters. Exceptions to this rule must be approved in advance by the Committee on Graduate Studies.

8. The teaching duties of a graduate student shall be awarded academic credit commensurate with the time allotted to them if the student so desires.

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[*] This program has been funded on a three-year trial basis by the Innovation Fund of the University, with matching funds from the Dean of Graduate Studies. Funds are available to support approximately four such postdoctoral fellowships per year for three years.

CHAPTER VIII Financial Aid

1. To the extent that cutbacks in fellowship support must be made, the first year of the Ph.D. program is the optimal target for such cutbacks.

2. All students admitted to Ph.D. programs should receive tuition for the duration of residency. The only exceptions to this should be those unusual cases in which a student is clearly both able and willing to assume the full cost of his education.

3. If a department varies the amount of financial aid in accordance with the student's relative "merit," it should do so only in the first year of the program.

4. Whenever possible departments should attempt to provide equal and adequate support for all students beyond the first year. If it proves necessary to provide unequal support beyond the first year, it is appropriate and desirable to take into account the student's financial means and need in determining support levels.

5. Every entering Ph.D. student (except those who are totally self-sufficient) should be guaranteed some combination of fellowship, assistantship, and loan funds amounting to the standard stipend plus tuition for the first year of graduate school.

6. Even if some departments find it impossible to offer full support to all first-year students, a special and independent program of fellowship aid to minority students should guarantee tuition plus the standard stipend for the initial year of study of every such applicant accepted at Stanford.

• 7. Students should have the option of delaying their matriculation in a graduate program for up to one year, so that they may accumulate funds to defray first-year expenses.

8. The University and the departments have an obligation to provide detailed and realistic information about the high costs of living in the Stanford area.

CHAPTER IX Alternative Programs

1. Expanded opportunities for Master's level study, both within individual departments and across disciplines, shall be provided.

1A. The University, through the Counseling and Testing Service, the Placement Center, and the Dean of Graduate Studies, shall engage in a thorough study of employment opportunities for A.M. holders in the Humanities and Sciences.

1B. The Committee on Graduate Studies shall assume an active role in support of increased opportunities for interdisciplinary Master's programs.

• 2. The University and its departments shall establish policies that enable limited numbers of highly qualified students to study at the graduate level on a part-time basis.

2A. Applicants for admission on a part-time basis must submit detailed plans of study, which, before admission is final, must be approved by the student's prospective adviser and, where appropriate, by other members of the department (such as the DGS).

2B. Students who matriculate as part-time students must complete all the requirements for the Master's degree (or the departmental equivalent) by the end of their ninth quarter. Students who enter with a Master's degree must complete Ph.D. course work within nine academic quarters. All students who enter Ph. D. programs must complete one year of full-time residency at Stanford, preferably during one of the research years.

2C. Students who matriculate on a part-time basis should be eligible for fellowship support during the required one-year residency; in the allotment of such aid, they should be treated on an equal footing with full-time students.

2D. Departments shall consider allowing a limited number of applicants to defer matriculation for one year.*

2E. The University shall adopt general, departmentally administered provisions for interrupted study. Students who wish to take leaves of absence will, in consultation with appropriate members of their department (in particular, their adviser and the DGS), submit to the department and to the Dean of Graduate Studies (1) a complete statement of reasons for requesting a leave of absence; (2) expected date of return; (3) a statement of the student's progress at the time the leave will take effect. The department will supply a statement of (1) the terms of the fellowship support (if any) guaranteed to the student on his return at the stipulated time; and (2) any other provisions or guarantees the department and the student may find appropriate.

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* This recommendation substantially coincides with Recommendation 7 of the Committee on Financial Aid.

3. The University shall offer opportunities to well-qualified men and women for non-degree-oriented study at the graduate level via non-matriculated-student status in the University Division.

3A. Applicants for non-matriculated graduate student status shall be accepted on the basis of present admissions requirements: results of the Graduate Record Examination, letters of recommendation, detailed statements of purpose, and evidence (e.g., transcripts of undergraduate work) of ability and preparation to do graduate work.

3B. Non-matriculated students shall be selected by the Dean of Graduate Studies for a period not to exceed two years. Students entering under this program shall submit a review of their work at the end of each year. They may apply for a renewal of their status at the end of the period for which they were admitted.

CHAPTER X Special Topics

• 1. Steps shall be taken both by the University and by departments having fewer than 40 per cent female graduate students to increase applications from women.

• 2. Steps shall be taken in all departments to provide special assistance to female graduate students in finding jobs after graduation.

• 3. Steps shall be taken that will significantly increase the number of women on the faculty.

CHAPTER XI Departmental Visitation Teams

• 1. The Committee on Graduate Studies shall continue the Departmental Visitation Teams on the model developed by SGES. Such visits shall take place at the rate of three or four a year. Each Visitation Team should consist of two or three faculty members and two or three graduate students, primarily from fields closely related to the department to be visited. Recommendations should include provision for follow-up by either the Committee on Graduate Studies or the appropriate Deans.

Appendixes

APPENDIX I-1

Charge to the Steering Committee

The Steering Committee of a Study of Graduate Education at Stanford is asked to perform a variety of functions, which fall into five categories discussed in detail below: (1) the identification and articulation of long-range goals for graduate education at Stanford; (2) the implementation of a pilot project using Departmental Visitation Teams to study graduate curricula in several departments; (3) the appointment, coordination, and support of topic committee activities; (4) the supervision of staff data collection efforts; and (5) the formulation and dissemination of recommendations, monitoring the progress of these recommendations and, when appropriate and desirable, sharing with other universities the insights and conclusions of the study.

The Identification and Articulation of Goals

In delegating this topic to the Steering Committee, we do not mean to imply that the consideration of desired goals can or should be removed from the problem areas assigned to individual topic committees. However, it would certainly be inappropriate for each topic committee to debate the fundamental goals, present and future, of graduate education at Stanford. For example, we would hope that the topic committee on the dissertation would consider the relationship of the dissertation to the intended careers of graduate students, but that it resist the temptation to delve deeper into the questions of the fundamental goals of graduate education and the relationship of those goals to a rapidly changing society, leaving such consideration to the Steering Committee.

While we reject the argument that the highly autonomous and diverse nature of degree programs prevents meaningful discussion of university-wide goals, we also recognize that these characteristics make such discussion extremely difficult. Statements of goals which are sufficiently broad to encompass scores of different programs can easily become vacuous. The attempt should be made, however, to examine critically Stanford's current contributions in the larger context of society, to consider the implications of changing social needs for broad policies of recruitment and training, and to question whether our resources are being put to their optimum use.

The Steering Committee should deal with the questions: Why should graduate education exist at Stanford? What characteristics should our graduate programs have in order to promote and ensure their value to the individuals involved, the University, and the larger society?

An integral part of the answers to these questions should include the University's commitment to educate Black, Chicano, and American Indian members of the society. All of the issues important to graduate education contain special questions relevant to the needs of these groups.

Pilot Project in the Use of Departmental Visitation Teams

We ask the Steering Committee to explore on a trial basis the use of non-departmental student-faculty committees to review departmental graduate programs and make recommendations for their improvement. In designing the pilot program and in evaluating its success, the Steering Committee should bear in mind two goals: (1) to receive from the participating departments support for, and cooperation with the reviewing process, and (2) to obtain reviews of value to the departments.

Coordination and Support of Topic Committee Activities

To discourage any tendencies for topic committee efforts to head in contradictory directions, we recommend a strong coordinating role for the Steering Committee. To achieve this coordination, we recommend that each Steering Committee member, with the exception of the chairman, also serve on a topic committee.

The support function refers primarily to topic committee needs for information about Stanford departments. The Steering Committee is responsible for meeting these needs (with the staff assistance discussed below); wherever possible, different information needs from similar sources should be coordinated.

Staff Support and Supervision

The study activities envisioned will require the support of one full-time staff assistant. Clerical and secretarial time should come from the office of the Dean of Graduate Studies; if necessary, a part-time position should be added to that office for the duration of the study. Information gathering from departments should be done under the auspices of the study, and the Steering Committee should help to promote departmental cooperation with these staff efforts.

Final Recommendations

Dissemination of some self-contained recommendations on which action could be taken immediately could easily occur before the Study is completed. In some areas, recommendations for action can be formulated with relative ease and speed; their distribution by the Steering Committee to the appropriate University agencies should also be prompt. The Steering Committee should monitor the progress of any such recommendations and assist in their implementation.

It may be desirable in some cases for the Steering Committee to investigate the possibility of other major universities joining with Stanford in instituting changes of considerable magnitude, for example the decision to introduce a new graduate degree. United action is not a prerequisite for change at Stanford, yet where the benefits are large, the possibility should be explored and encouraged.

Composition of the Steering Committee

The Steering Committee should number no more than ten members including the chairman. Although the magnitude of work required by members argues for appropriate release time from other duties, financial exigencies argue in the other direction. We therefore recommend 50 per cent relief time for the chairman, and such relief for other members as can be found. The characteristics of energy, imagination, and deep concern for graduate education are far more important than area of academic specialty or faculty-student status; however, at least one-third to one-half of the members should be graduate students. Members should be appointed by the Committee on Committees in consultation with the President, with student members being nominated by the ASSU Committee on Nominations.

COMMITTEE ON GRADUATE STUDENT TEACHING

The Committee on Graduate Student Teaching shall study the role of the graduate student as teacher from several different points of view. Among these are:

1. *Career Preparation.* What proportion of our current graduate students will enter careers in teaching? What proportion of their time will these teachers spend teaching? What training do they currently receive in teaching? How might this training be augmented? Does this University have a role in the training of scholars who will teach but not carry out research?
2. *Current Interests.* Are teaching opportunities currently available to graduate students? Are these opportunities commensurate with the interests of the students? How might the range of possible teaching opportunities be broadened? Might the University consider a formal teaching externship program for interested graduate students?
3. *The Undergraduate Curriculum.* How does current graduate student teaching affect the undergraduate curriculum? Should we increase the number of seminars available by encouraging graduate student teaching? Might the undergraduate curriculum be broadened by encouraging teaching by graduate students in the professional schools?
4. *Financial Aid.* Should we continue the present close association between teaching and financial reward?

COMMITTEE ON THE PH.D DISSERTATION AND ALTERNATIVE DEGREES

This committee shall investigate (A) variations in the nature of and (B) the time required to complete Ph.D. dissertations at Stanford. In addition, it may wish to consider various alternatives to the Ph.D. for the type of student who is currently in our Ph.D. programs. Among the questions to be considered should be:

1. Some departments demand that the Ph.D. dissertation be a truly original contribution to knowledge and written in the style of a finished and polished book; other departments feel it need only demonstrate a mastery of research methodology. On the average, the former type of dissertation requires considerably more time and effort than the latter type. Is this variation in the definition of the dissertation appropriate? Might some areas profitably adopt some of the definitions and models present in others?

2. For those persons intending to go into teaching, the innovative-research type of dissertation in a narrow specialty may not be as pertinent as an integrative-expository type of dissertation or one that advances the teaching of a discipline. Perhaps the substance, form, and length of the dissertation should represent a wider range of scholarly styles and methods than are currently acceptable. Are there different definitions of the dissertation which might be more appropriate for some of our students?

3. Should Stanford adopt one or more of the proposals for new degree programs, e.g., the Master of Philosophy or the Doctor of Arts?

COMMITTEE ON FINANCIAL SUPPORT OF GRADUATE STUDENTS

The Committee on Financial Support of Graduate Students shall study policy issues related to the allocation of available financial resources and questions of student and faculty initiative in increasing resources. Among the questions to be considered are:

1. What account should be taken of financial need in making awards? (In Law, Business, Medicine, need is a critical variable; in most other fields it is ignored, except possibly in relation to supplementation where there are dependents.)

2. Should the use of loans be enlarged?

3. To what degree (and how) should the integrated support principle be extended? (Models exist in English, Psychology, Physics, Mathematics, Biology, and some other departments.)

4. What are appropriate income ceilings and supplementation limits? How should we monitor and enforce these?

5. How can we establish just and practical incentives to students and to departments for bringing in outside awards?

6. What priority should be accorded the retention of the four-year guaranteed assistance principle in Humanities and Sciences?

COMMITTEE ON METHODS FOR CHANGE OF GRADUATE CURRICULA

The Committee on Methods for Change of Graduate Curricula shall investigate various methods by which the graduate programs can respond to pressures for curricular change. The questions to be studied fall into two classes:

1. *Interdepartmental Problems.* There are many forces calling for the development of graduate offerings which do not "fit" into single departments. Such forces include interests of students and faculty, growing awareness of social problems, and opportunities for research addressed to inter-

disciplinary problems. How can the University develop suitable ways to respond to these forces?

2. *Intradepartmental Problems*. The second major area of work would be the development of appropriate responses to forces that arise within the traditional departmental framework. These forces include dissatisfaction with the nature of the Ph.D., impulses for the development of alternative doctoral degrees, and desire for change of existing curricular requirements. These matters, where they are naturally unidisciplinary, are departmental. But there is a measure of University concern attaching to them, nonetheless. If too many departments in a university fail to respond to needs for change, de facto ossification affects the whole institution.

Departmental responses may occur at several levels, each of which should receive the committee's attention. The first level concerns the mechanisms available to students and faculty for bringing perceived problems to the attention of others in the department. In many departments, graduate students are voting members of curriculum committees; to our knowledge, however, no appraisal has been made of the advantages and pitfalls of this type of student participation. A second level of response is the availability of alternatives to the "standard" departmental program; for example, the creation of experimental courses within the department in which graduate students and faculty may test new ideas, or the possibility of a student substituting examinations for courses, or teaching a seminar instead of taking an oral. These types of responses should be investigated and critically reviewed by the subcommittee. A third level of response is that of formal policy change. Again, the relevant questions are the kinds of problems treated at this level, the mechanisms available for change, the parties involved in initiating and implementing changes, and the apparent success of the different procedures used.

COMMITTEE ON ALTERNATIVE PROGRAMS

The Committee on Alternative Programs shall investigate the possibilities of alternative programs and guidelines in graduate work. Among the questions they should consider are:

1. Most departments in Humanities and Sciences offer the Ph.D. only. Is there a need to develop more Master's programs? In what fields? What are the job possibilities for A.M.'s?

2. Graduate students typically enroll as full-time students. Is there a need for part-time-student categories?

3. What barriers currently hinder women in both entering and completing degree programs? What changes will lower these barriers?

4. Graduate students are admitted to graduate programs to work toward a specific degree. Should an open admissions category (much like the graduate-at-large) be created to permit students the experience of graduate work without an immediate decision to work toward any particular degree?

5. There are provisions for a student to develop an interdisciplinary Ph.D. Should such a provision be established for candidates for the A.M.?

6. The University frequently permits government employees or visiting

scholars to enroll in classes for improvement of their skills with no degree objective in mind. Should such a category be opened to all students?

COMMITTEE ON ASSESSMENT AND REPORTING OF STUDENTS' PERFORMANCE AND PROSPECTS

The degree candidate, to be successful, must meet departmental expectations satisfactorily. It is, therefore, essential for him to know what these expectations are and how his performance matches up with them.

This committee will survey present practices — and satisfaction with them — relating to:

1. How, where, and when the student is informed of what the department expects of him in proceeding toward the doctorate.
2. How and when the student's performance is assessed.
3. How and when he is informed of his prospects for successful completion of his program.

The committee will be concerned with informational materials, preliminary examinations, usefulness of grades, the university oral examination, and other aspects of the setting of departmental expectations, and assessing their realization by individual students. It is hoped that collation, comprehension, and reporting of the varied (and sometimes ingenious) measures in use will be of value to all.

In addition, the committee may frame some recommendations in the area of its study.

APPENDIX I-2

Survey of Stanford Ph.D. Recipients, 1960-1971

Questionnaires were sent to three samples of Stanford Ph.D. recipients during the spring and early summer of 1971. Questions pertained to respondents' professional or scholarly activities after receiving the Ph.D., and to their evaluation of the strengths and weaknesses of their graduate training. The mailings were repeated in late summer for those who did not return the first questionnaire, yielding a response rate of better than 60 per cent overall (Table 1).

First, Ph.D.'s in Humanities and Sciences disciplines were sampled randomly by department and year. The sample included ten Ph.D.'s from each department, plus an additional 10 per cent of the remainder, selected from each of two three-year periods (calendar years 1960–62 and 1965–67). This procedure resulted in a 20–30 per cent sample for larger depart-

TABLE 1
Questionnaire Samples

	Ph.D.'s awarded 1960–62 and 1965–67					Ph.D.'s awarded 1970–71		
School	Total *N*	Sample *N*	Returned *N*	Pct. of sample returned	Pct. of total returned	Total *N*	Returned *N*	Pct. of total returned
Business	61	15	10	67%	16%			
Education	276	37	27	73	10			
Engineering	552	138	87	63	16			
Humanities	284	158	91	58	32	87	55	63%
Social Sciences	215	123	75	61	35	63	46	73
Physical Sciences	407	141	85	60	21	117	78	67
TOTAL	1,795	612	375	61%	21%	267	179	67%

TABLE 2

Time Spent by Stanford Ph.D.'s in Professional Activities

(*Mean per cent*)

School	*N*	Research	Teaching under-graduates	Teaching graduates	Adminis-tration	"Other"
Humanities:						
1960–62	30	15%	40%	16%	24%	5%
1965–67	61	19	49	15	13	4
1970–71	36	19	55	8	7	11
Social Sciences:						
1960–62	33	25	22	23	19	11
1965–67	42	33	24	18	16	9
1970–71	35	37	27	17	10	9
Physical Sciences:						
1960–62	36	43	17	18	14	8
1965–67	49	43	19	15	12	11
1970–71	58	63	17	7	6	7

ments and a 100 per cent sample for smaller ones. Second, ten plus 10 per cent of the Ph.D.'s for calendar years 1960–62 and 1965–67 were randomly sampled from each of the Schools of Business, Education, and Engineering. The sample for the School of Engineering was stratified by department. Finally, the questionnaire was sent to all Humanities and Sciences Ph.D. recipients whose names appeared in the 1971 Commencement Program.

Our responses make it possible to present information separately for each school, and except for the School of Business, where the sample is quite small, separately by three epochs: calendar 1960–62, calendar 1965–67, and the academic year 1970–71. In the tables that follow, however, the time breakdown is not always shown where no time trends were apparent in the data and consolidation made for greater clarity. In a few cases questions were not applicable to certain schools or departments; thus Table 2 and Table 3 show results for Humanities and Sciences only.

Table 2 shows that people with Stanford Ph.D.'s in the Humanities spend much less time on research than their counterparts in the Physical Sciences, with the Social Sciences in an intermediate position. Approximately 50 per cent of the time of Ph.D.'s in the Humanities is devoted to teaching undergraduates, as contrasted with less than 20 per cent in the Physical Sciences; administration shows a similar pattern. As one might expect, the longer the elapsed time since receipt of the degree, the greater

TABLE 3
Responses of Stanford Ph.D.'s to Questions about Teaching and Teaching Training

					Pct. of TA's believing that:	
School	*N*	Pct. who prepared and taught own courses	Pct. who served as TA's	Mean no. of courses taught by TA's	Experience aided graduate training	Training for college teaching was adequate
Humanities:						
1960–62	30	53%	77%	4.2	88%	79%
1965–67	61	36	74	3.8	81	78
1970–71	55	46	76	3.7	88	77
Social Sciences:						
1960–62	33	27	79	3.5	92	68
1965–67	42	19	62	2.3	72	59
1970–71	46	37	74	2.9	70	63
Physical Sciences:						
1960–62	36	25	61	3.5	71	84
1965–67	49	33	76	3.1	65	75
1970–71	78	19	82	3.3	76	60

the time devoted to administration and the less the time devoted to research.

Table 3 indicates that a substantial majority of the respondents in all three divisions of Humanities and Sciences served at one time or another as teaching assistants, and that the number of courses taught was on the average somewhat higher in the Humanities than in the Social Sciences and Physical Sciences. A majority of respondents both valued this for its own sake and deemed it an adequate preparation for college teaching, though physical scientists were more doubtful on the first count and social scientists on the second.

Tables 4 and 5 show the early publication patterns of Stanford Ph.D.'s in Humanities and Sciences and other schools, respectively. It is sometimes reported that an astonishingly small percentage of Ph.D.'s ever publish anything at all, or at least anything other than their dissertation. For this Stanford sample a very contrary pattern emerges. It is true that 64 per cent of 1970–71 Ph.D.'s in the Humanities reported no publication at all, but no other category had a non-publication figure higher than 41 per cent. As expected, books figured more prominently as a mode of publication in the Humanities and the Social Sciences than in the Physical Sciences

TABLE 4

Publications of Stanford Ph.D.'s of 1960–71 in the Humanities and Sciences

School	1960–62			1965–67			1970–71		
	N returned	Pct. of respondents publishing	Median no. of publications	*N* returned	Pct. of respondents publishing	Median no. of publications	*N* returned	Pct. of respondents publishing	Median no. of publications
Humanities	30			61			55		
Books		47%	1		31%	1		6%	1
Books from dissertation		20	1		16	1		4	1
Articles		64	7		62	3		35	1
Articles from dissertation		27	1		30	1		14	1
No publications		27			31			64	
Social Sciences	33			42			46		
Books		39	2		29	1		15	2
Books from dissertation		21	1		14	1		6	2
Articles		54	5		83	4		56	3
Articles from dissertation		33	2		38	1		35	1
No publications		30			14			41	
Physical Sciences	36			49			78		
Books		8	1		4	1		4	1
Books from dissertation		0	0		0	0		3	1
Articles		86	19		84	6		77	3
Articles from dissertation		36	2		53	2		53	2
No publications		14			14			23	

NOTE: Respondents listed as having published books may be author, co-author, editor, or co-editor. Respondents listed as having published articles may be author or co-author. Median number of publications was computed only for those respondents who published.

TABLE 5

Publications of Stanford Ph.D.'s of 1960–62 and 1965–67 in the Professional Schools

School	*N* returned	Pct. of respondents publishing	Median no. of publications
Business	10		
Books		20%	1
Books from dissertation		0	0
Articles		80	5
Articles from dissertation		30	1
No publications		20	
Education	27		
Books		30	1
Books from dissertation		7	1
Articles		63	2
Articles from dissertation		11	1
No publications		22	
Engineering	87		
Books		2	1
Books from dissertation		0	0
Articles		86	6
Articles from dissertation		59	2
No publications		14	

NOTE: Respondents listed as having published books may be author, co-author, editor, or co-editor. Respondents listed as having published articles may be author or co-author. Median number of publications was computed only for those respondents who published.

or Engineering. A more interesting finding is that the dissertation does not dominate early publication. For example, among social scientists taking their degrees in 1965–67 the median number of articles was four, whereas the median number of articles from the dissertation was only one. Some 83 per cent of these social scientists had published articles, but only 38 per cent had published articles based on their dissertation; 29 per cent had published books, but only 14 per cent had published books based on the dissertation. Another interesting finding is that the professional fields in general have very low non-publication rates, even in comparison with those in Humanities and Sciences. .

Table 6 indicates strikingly that a large percentage of Ph.D.'s tend to find work in areas different from the one for which they were trained—this figure ranging from a low of 22 per cent in Education to a high of 40

TABLE 6

Stanford Ph.D.'s Involved or Interested in Increased Educational Breadth

(Per cent of respondents)

Question	Humanities (N = 146)	Social Sciences (N = 121)	Physical Sciences (N = 163)	Business (N = 10)	Education (N = 27)	Engineering (N = 87)
Are you presently working professionally in areas outside the discipline in which you were trained?	29%	31%	28%	40%	22%	26%
Which of the following are applicable to your course work in graduate school?						
I should have taken more courses only loosely related to my major interests in my discipline	26	27	28	30	37	29
I should have taken more courses outside my discipline	35	36	23	10	41	22
I should have taken my Ph.D. in another discipline	4	3	4	0	7	8
I should have taken my Ph.D. in an interdisciplinary program rather than in a single discipline	21	18	13	10	15	11

per cent in Business. Approximately one-quarter of all respondents in each field indicate that they should have taken more courses only loosely related to their major interests in their discipline, and a similar fraction now feel they should have taken more courses outside their discipline; but very few respondents feel they should have taken their Ph.D. in a different discipline.

Table 7 is one of several in which respondents were asked to rate certain qualities of their experience on a scale from 1 to 6, with 1 at the low end and 6 at the high end. In interpreting this table, think of 3.5 as the middle, 5 as definitely high, 2 as definitely low. Certain trends stand out pretty much independently of field. First of all, the language examinations are very unpopular; only in the Humanities did they receive an

TABLE 7

Evaluations by Stanford Ph.D.'s of Aspects of Their Training

Aspect	Humanities		Social Sciences		Physical Sciences		Business		Education		Engineering	
	Mean	*N*	Mean	*N*	Mean	*N*	Mean	*N*	Mean	*N*	Mean	*N*
Dissertation	4.7	143	4.6	118	4.7	159	4.7	10	4.5	26	4.8	86
University oral exam	3.5	142	2.5	118	3.2	159	2.4	10	3.0	27	3.5	87
Courses (required)	4.2	141	4.1	117	4.3	159	4.0	10	4.1	27	4.6	85
Courses (optional)	4.5	135	4.3	115	4.3	157	4.6	9	4.7	24	4.9	85
Research	4.4	125	4.9	112	5.0	148	4.4	7	4.9	24	5.0	78
Dissertation research	4.9	140	4.6	118	5.2	158	4.5	10	4.7	26	5.1	84
Tutorials or independent study	4.5	124	4.1	99	3.7	115	4.1	7	4.4	24	4.1	63
Language examinations	2.6	133	1.6	115	2.0	149	1.7	10	1.9	16	2.0	83
Teaching apprenticeship	4.4	118	3.8	100	4.0	126	3.3	3	4.6	17	3.7	46
Giving own courses	4.5	97	4.3	58	3.5	87	4.6	5	4.1	11	4.3	36
Working free of faculty	4.0	107	4.0	97	4.0	118	4.2	6	4.1	19	4.1	60
Working with other students	3.7	108	3.8	105	4.1	139	4.2	8	4.3	25	4.0	69

NOTE: Mean evaluations are based on a 6-point scale, where 1 is "very ineffective" and 6 is "very effective." Figures include respondents from 1960–62, 1965–67, and 1970–71.

TABLE 8

Perceptions by Stanford Ph.D.'s of Departmental Evaluations of Their Work as Graduate Students

	[1] Evaluation provided sufficient feedback to help make graduate training as useful as possible		[2] Evaluation led to effective advice and direction from faculty	
School	Pct. expressing agreement	Total *N* responding	Pct. expressing agreement	Total *N* responding
Humanities				
1960–62	48%	29	52%	25
1965–67	44	55	46	50
1970–71	44	50	49	49
Social Sciences				
1960–62	50	32	50	32
1965–67	54	39	57	37
1970–71	45	42	29	41
Physical Sciences				
1960–62	79	34	71	31
1965–67	60	42	62	42
1970–71	55	67	51	63
Business (1960–62, 1965–67)	86	7	83	6
Education (1960–62, 1965–67)	72	25	78	23
Engineering				
1960–62	65	17	69	16
1965–67	63	57	62	60

NOTE: Responses are to the question "Do you feel that your department's evaluation of your interest and potential (via examinations, formal and informal evaluations, etc.) [1] provided sufficient feedback to help make your graduate training as useful as possible, [2] led to effective advice and direction from faculty?"

average rating above 2.0. The university oral examination is only marginally more popular; no school rated it higher than 3.5. Clear approbation in all fields attached to the dissertation, to research, to dissertation research, and somewhat less enthusiastically to tutorials or independent study. Generally, research, dissertation research, and the dissertation itself were more highly valued in the Physical Sciences and in Engineering (but by a small margin) than in other fields.

Table 8 reports the percentage of respondents who felt that their depart-

TABLE 9

Frequency of Contact Between Stanford Ph.D.'s as Graduate Students and Other Students and Faculty

School	Interaction with faculty	Work with faculty on research	Interaction with other graduate students
Humanities:			
Mean	4.1	3.1	4.3
N	142	136	142
Social Sciences:			
Mean	4.1	3.8	4.8
N	120	120	121
Physical Sciences:			
Mean	3.9	3.8	4.7
N	160	155	159
Business:			
Mean	3.8	2.2	4.5
N	10	10	10
Education:			
Mean	3.9	4.0	4.7
N	27	26	27
Engineering:			
Mean	4.1	3.9	4.5
N	86	87	87

NOTE: Mean evaluations are based on a 6-point scale, where 1 is "rare" and 6 is "frequent." Figures include respondents from 1960–62, 1965–67, and 1970–71.

ment's evaluation of them as students had been sufficient and effective. Interestingly, whereas satisfaction in this regard runs higher in the Physical Sciences than in the Humanities and the Social Sciences, the Physical Sciences percentage has declined dramatically from 1960–62 to 1970–71. A similar drop may be apparent in the Social Sciences. Generally, respondents from schools other than Humanities and Sciences report higher satisfaction on this score.

Table 9, the frequency of contact between the reporting graduate and other students and faculty is shown on a six-point scale, ranging from 1 for rare to 6 for frequent. The only marked difference between schools is the low Business School figure for work with faculty on research, and this figure may be unreliable given the sample size of only 10.

Table 10 shows a very high satisfaction with the dissertation as training for research. Only Business shows a reported value of less than 4.6 on a six-point scale. Understandably, respondents found the dissertation less useful as training for teaching. Ph.D.'s of all schools regarded graduate

TABLE 10

Perceptions by Stanford Ph.D.'s of the Adequacy of Their Training for Research and Teaching

School	Adequacy of dissertation as training for: Teaching	Adequacy of dissertation as training for: Research	Adequacy of graduate training for: Undergraduate teaching	Adequacy of graduate training for: Graduate teaching	Adequacy of graduate training for: Dissertation	Adequacy of graduate training for: Research
Humanities:						
Mean	3.1	4.9	3.7	3.7	4.2	4.6
N	138	142	141	125	128	142
Social Sciences:						
Mean	2.6	4.7	3.3	3.7	4.3	4.7
N	115	121	114	116	107	120
Physical Sciences:						
Mean	2.5	5.0	3.7	3.9	4.2	5.2
N	144	161	147	147	142	158
Business:						
Mean	3.1	4.1	4.1	4.4	3.4	4.1
N	10	10	9	10	8	10
Education:						
Mean	3.2	4.7	3.6	4.2	3.7	4.4
N	25	27	22	25	27	27
Engineering:						
Mean	3.0	4.9	4.0	4.5	4.6	5.2
N	79	87	71	73	81	86

NOTE: Mean evaluations are based on a 6-point scale, where 1 is "very inadequate" and 6 is "very adequate." Figures include respondents from 1960–62, 1965–67, and 1970–71.

training as better preparation for research in general than for the dissertation in particular or for teaching. As we have seen in an earlier table, Ph.D.'s in Engineering and the Physical Sciences report more satisfaction with their training for research than Ph.D.'s from other schools.

Table 11 shows responses by Stanford Ph.D.'s to questions about the adequacy of their preparation for their first professional role after receiving the degree. Responses ranged over four categories from "Very poor" to "Very good"; in no group did the frequency of "Very poor" responses exceed 5 per cent. In Engineering, Education, and Business most respondents checked "Very good." Ph.D.'s in the Physical Sciences were only slightly less positive, at least through 1967. The Humanities and the Social Sciences report the least favorable picture, but even there about 85 per cent of respondents checked either "Reasonably good" or "Very good," and roughly the same percentage of respondents in all schools report that they would choose Stanford again.

TABLE 11
Perceptions by Stanford Ph.D.'s of the Overall Adequacy of Their Graduate Training

	Response and total *N* responding					Response and total *N* responding	
	Training was:						
School	Very poor	Rather poor	Reasonably good	Very good	*N*	Would choose Stanford again	*N*
Humanities:							
1960–62	4%	11%	53%	32%	28	67%	27
1965–67	2	5	52	41	58	87	55
1970–71	3	10	40	47	30	84	50
Social Sciences:							
1960–62	3	6	53	38	32	76	29
1965–67	5	8	60	27	40	90	40
1970–71	3	13	42	42	33	86	42
Physical Sciences:							
1960–62	0	9	40	51	35	82	34
1965–67	0	2	44	54	48	86	44
1970–71	2	7	47	44	55	86	72
Business (1960–62, 1965–67)	0	11	33	56	9	100	10
Education (1960–62, 1965–67)	4	8	29	59	24	88	25
Engineering:							
1960–62	0	0	47	53	17	73	15
1965–67	0	3	34	63	68	92	66

NOTE: Adequacy was judged relative to "first professional role" after receipt of the Ph.D. Since June 1971 Ph.D. recipients had not taken up such a role at the time the survey was undertaken, the 1970–71 sample includes only those receiving the Ph.D. in October, January, and April.

APPENDIX II-1

First Placements of Stanford Ph.D.'s in Humanities and Sciences

Type of employment	Date of degree			
			1970–71	
	1960–62 ($N = 100$)	1965–67 ($N = 153$)	Ph.D.'s ($N = 186$)	All employed ($N = 267$)
"Cartter" universities[a]	19%	19%	15%	14%
Other universities[b]	31	41	33	34
Colleges	16	14	11	15
Other academic positions	10	11	20	15
Non-academic research	11	10	6	5
Other non-academic positions	13	5	9	11
Employed, position unknown	0	0	2	3
Unemployed[c]	0	0	4	3

NOTE: The 1960–62 and 1965–67 figures are based on the SGES questionnaire random sample of Ph.D.'s discussed in Appendix I-2. The first column of 1970–71 figures is from the 1971 President's Reports from departments, excluding Asian Languages, Biological Sciences, Communication, French, Linguistics, Psychology, and Sociology. The last column includes, in addition to Ph.D's, students who had completed all Ph.D. requirements except their dissertations who left the University to take employment between July 1, 1970, and June 30, 1971.

[a] "Cartter" universities are those ranked by Allan M. Cartter, *An Assessment of Quality in Graduate Education* (American Council on Education, 1966). For the 1970–71 sample a similar study by Kenneth D. Roose and Charles J. Andersen, *A Rating of Graduate Programs* (American Council on Education, 1970), was used.

[b] Includes (1) placements in universities not ranked in the Cartter or Roose and Andersen reports, and (2) university placements in disciplines not rated in these reports, notably Communication, Computer Science, Drama, Humanities, Slavic, and Statistics. For a more detailed description of selection procedures used in these surveys, see Cartter, p. 10.

[c] Includes a few who are "unemployed by choice," e.g., owing to changes in career goals, extended travel, etc.

APPENDIX II-2

Apparent Attrition and Time to Degree by Stanford Ph.D.'s, 1960-1971

TABLE 1

Years from Matriculation to Degree by Stanford Ph.D.'s of 1969–71, by School and Department

School and Department	Years from matriculation to degree														
	0–2	2–3	3–4	4–5	5–6	6–7	7–8	8–9	9–10	10–11	11–12	*N*	Mean year to degree	Median year of completion	Year by which 75% have degree
HUMANITIES	1.3%	3.0%	11.0%	17.7%	15.6%	11.8%	11.8%	8.0%	7.2%	4.6%	8.0%	237	6.9	6	7
Asian Languages	0.0	0.0	0.0	25.0	0.0	25.0	0.0	25.0	25.0	0.0	0.0	4	7.1	6	8
Classics	0.0	0.0	16.7	50.0	16.7	0.0	0.0	0.0	16.7	0.0	0.0	6	5.3	4	5
Drama	6.7	6.7	6.7	6.7	6.7	6.7	0.0	13.3	20.0	6.7	20.0	15	9.4	8	10
English	0.0	1.4	11.3	15.5	21.0	12.7	9.9	4.2	5.6	8.5	9.9	71	7.1	6	8
French	0.0	0.0	0.0	7.1	7.1	21.5	28.6	0.0	14.3	7.1	14.3	14	8.8	7	9
German Studies	0.0	0.0	20.0	30.0	5.0	10.0	15.0	10.0	5.0	0.0	5.0	20	6.0	4	7
History	1.8	1.8	12.3	14.0	22.7	10.5	14.0	10.5	8.8	1.8	1.8	57	6.3	6	7
Linguistics	0.0	0.0	10.0	30.0	10.0	20.0	0.0	10.0	0.0	10.0	10.0	10	6.9	5	6
Music	0.0	0.0	0.0	0.0	33.3	0.0	0.0	33.3	0.0	33.3	0.0	3	8.0	8	8
Philosophy	4.4	17.4	17.4	17.4	8.7	8.7	12.9	4.4	0.0	0.0	8.7	23	6.0	4	7
Slavic	0.0	0.0	0.0	0.0	33.3	0.0	33.3	33.3	0.0	0.0	0.0	3	7.5	6	8
Spanish & Portuguese	0.0	0.0	0.0	36.3	0.0	18.2	18.2	9.1	0.0	0.0	18.2	11	7.6	7	7
SOCIAL SCIENCES	.6	4.9	21.9	23.5	18.0	10.9	7.7	4.9	1.1	2.2	4.4	183	5.8	5	7
Anthropology	4.5	0.0	13.6	18.3	31.9	9.1	13.6	4.5	0.0	0.0	4.5	22	5.9	5	7
Communication	0.0	16.7	50.0	0.0	16.7	0.0	0.0	0.0	0.0	8.3	8.3	12	5.4	4	5
Economics	0.0	0.0	10.5	29.0	18.4	15.8	13.2	7.9	0.0	2.6	2.6	38	6.1	5	7
Political Science	0.0	0.0	7.4	18.5	11.1	18.5	14.8	3.8	7.4	7.4	11.1	27	7.5	6	8
Psychology	0.0	8.8	35.2	27.9	17.7	7.4	0.0	1.5	0.0	0.0	1.5	68	4.5	4	5
Sociology	0.0	6.2	6.2	25.0	12.5	12.5	12.5	18.9	0.0	0.0	6.2	16	6.8	5	7

PHYSICAL SCIENCES	.4%	4.6%	28.6%	34.3%	16.7%	8.9%	3.9%	1.1%	.7%	.4%	.4%	282	4.8	4	5
Applied Physics	0.0	0.0	25.8	32.3	25.8	12.9	0.0	0.0	3.2	0.0	0.0	31	5.0	5	5
Biological Sciences[a]	0.0	2.9	11.9	44.1	23.5	5.9	5.9	2.9	0.0	0.0	2.9	34	5.5	5	5
Chemistry	0.0	1.4	47.1	47.1	3.0	1.4	0.0	0.0	0.0	0.0	0.0	70	4.2	4	4
Computer Science	0.0	24.0	16.0	32.0	20.0	8.0	0.0	0.0	0.0	0.0	0.0	25	4.4	4	5
Mathematics	0.0	4.8	30.9	28.6	21.4	4.8	7.1	2.4	0.0	0.0	0.0	42	4.8	4	5
Physics	1.9	1.9	17.0	24.5	22.6	18.8	7.6	1.9	1.9	1.9	0.0	53	5.5	5	6
Statistics	0.0	7.4	37.1	22.2	11.1	14.8	7.4	0.0	0.0	0.0	0.0	27	4.7	4	5
EDUCATION[b]	1.8	19.6	22.7	16.6	8.6	6.1	6.1	3.7	3.1	3.1	8.6	163	5.8	4	7
ENGINEERING	.2	4.0	11.2	23.1	29.9	13.9	5.6	5.6	1.7	1.5	3.3	481	5.8	5	6
Aeronautics and Astronautics	0.0	4.1	10.8	18.9	27.0	13.5	8.1	5.4	2.7	2.7	6.8	74	6.2	5	7
Applied Mechanics	0.0	3.3	16.7	36.6	20.0	16.7	0.0	0.0	6.7	0.0	0.0	30	5.1	4	6
Chemical Engineering	0.0	4.3	0.0	34.8	47.9	8.7	0.0	0.0	0.0	0.0	4.3	23	5.3	5	5
Civil Engineering	1.8	8.9	19.7	30.2	14.3	8.9	5.4	1.8	1.8	1.8	5.4	56	5.4	4	6
Electrical Engineering	0.0	3.2	5.7	21.0	35.1	17.2	8.3	5.7	.6	1.9	1.3	157	6.0	5	6
Engineering-Economic Systems	0.0	0.0	23.1	23.1	38.4	7.7	0.0	0.0	7.7	0.0	0.0	13	5.1	5	5
Industrial Engineering	0.0	0.0	35.0	25.0	20.0	5.0	5.0	10.0	0.0	0.0	0.0	20	5.2	4	6
Materials Science	0.0	4.7	4.7	18.5	25.5	16.3	4.7	14.0	2.3	2.3	7.0	43	6.7	6	7
Mechanical Engineering	0.0	5.3	13.2	5.3	39.4	18.3	5.3	7.9	0.0	0.0	5.3	38	5.9	5	6
Operations Research	0.0	0.0	14.8	37.1	33.3	7.4	0.0	7.4	0.0	0.0	0.0	27	5.2	5	5

NOTE: See Note to Chapter II, Table 2, p. 9.

[a] Includes Biophysics.

[b] Includes Ed.D. recipients.

TABLE 2

Graduate Student Re-enrollment in Humanities and Sciences, by Department

School and department	Pct. of first-year students re-enrolling in:					
	2d year		3d year		4th year	
	Pct.	*N*	Pct.	*N*	Pct.	*N*
HUMANITIES	82%	634	66%	537	46%	373
Asian Languages	95	22	73	15	55	9
Classics	87	39	81	31	77	22
Drama	93	28	76	21	40	15
English	84	115	63	97	45	69
French	62	42	49	36	28	29
German Studies	83	54	70	46	46	37
History	77	145	66	126	59	79
Linguistics	86	43	74	39	65	26
Music	85	20	76	17	50	10
Philosophy	80	54	70	46	53	38
Slavic	72	32	48	29	26	19
Spanish & Portuguese	80	40	58	34	20	20
SOCIAL SCIENCES	80	450	71	378	59	256
Anthropology	70	60	56	50	55	31
Communication	83	54	75	48	70	34
Economics	77	100	71	86	58	60
Political Science	84	91	73	77	53	49
Psychology	92	95	80	78	63	51
Sociology	82	50	62	39	52	31
PHYSICAL SCIENCES	80	642	66	503	56	322
Applied Physics	68	55	45	38	43	21
Biological Sciences[a]	88	94	80	83	68	57
Chemistry	89	127	76	97	63	64
Computer Science	77	93	51	70	36	44
Mathematics	72	123	48	91	40	53
Physics	85	105	81	89	79	56
Statistics	73	45	68	35	44	27

SOURCE: Graduate Awards Office for Humanities and Social Sciences; departmental records for Physical Sciences.

NOTE: Second-year figures are based on students matriculating in the four academic years 1967–70; third-year figures on students matriculating in 1967–69; fourth-year figures on students matriculating in 1967 and 1968. Students may fail to re-enroll for a wide variety of reasons, not all of which should be considered "attrition." For example, students may opt not to pay the Terminal Graduate Registration fee after they have completed their three required years of full graduate tuition even though they may still actively be pursuing degrees. A few will have received their Ph.D. prior to the beginning of the fourth year. Students who do drop out of programs may do so because their interests have shifted, as well as because of academic deficiencies. Others may transfer to other departments in the University, or to other universities, and of course some will be serving in the armed forces or in alternative service.

[a] Includes Biophysics starting with 1969.

TABLE 3

Years from Conferral of Candidacy ("Green Sheet") to Degree by Stanford Ph.D.'s of 1970 and Earlier, by School and Department

School and Department[a]	Year Green Sheet was filed										Average no. of years to Green Sheet[b]
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960 and earlier	
HUMANITIES											
No. filing Green Sheet	110	99	132	106	108	86	77	64	38	239	3.29
Pct. w/degree by 1970	1%	11%	22%	56%	64%	63%	78%	78%	89%	84%	
Classics											
No. filing Green Sheet	1	3	3	5	3	1	5	—	4	—	2.77
Pct. w/degree by 1970	0%	0%	67%	40%	100%	0%	80%	—	100%	—	
Drama											
No. filing Green Sheet	5	5	3	11	4	9	13	7	1	66	4.72
Pct. w/degree by 1970	0%	20%	33%	73%	0%	44%	69%	57%	100%	67%	
English											
No. filing Green Sheet	28	20	44	38	35	14	17	20	17	75	3.47
Pct. w/degree by 1970	0%	5%	23%	60%	71%	64%	82%	80%	88%	92%	
French											
No. filing Green Sheet	7	4	9	2	8	10	5	4	—	8	2.92
Pct. w/degree by 1970	0%	0%	0%	0%	38%	40%	60%	50%	—	88%	
German Studies											
No. filing Green Sheet	7	7	15	5	7	11	6	6	—	7	2.58
Pct. w/degree by 1970	0%	14%	20%	80%	71%	73%	83%	100%	—	100%	
History											
No. filing Green Sheet	37	35	32	24	27	22	15	12	9	52	2.81
Pct. w/degree by 1970	0%	6%	19%	38%	56%	64%	87%	75%	78%	90%	
Humanities Special											
No. filing Green Sheet	1	3	5	2	3	1	1	—	—	—	
Pct. w/degree by 1970	0%	33%	20%	50%	67%	0%	0%	—	—	—	

NOTE: The first cell reads as follows: "Of the 110 students in the Humanities who filed a Green Sheet in 1969, 1% received the Ph.D. by the end of 1970."

[a] Although they have active Ph.D. programs, Art History, Comparative Literature, and Modern Thought and Literature are omitted from this list because they had not awarded any Ph.D.'s as of 1970.

[b] Figures were unavailable for the Schools of Medicine and Business and the Graduate Special program.

TABLE 3 (cont.)

School and Department	Year Green Sheet was filed										Average no. of years to Green Sheet
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960 and earlier	
HUMANITIES (cont.)											
Linguistics											
No. filing Green Sheet	7	6	4	4	5	3	—	—	—	—	
Pct. w/degree by 1970	0%	17%	50%	100%	100%	100%	—	—	—	—	
Music											3.79
No. filing Green Sheet	2	1	3	4	2	3	—	6	1	5	
Pct. w/degree by 1970	0%	0%	33%	50%	100%	67%	—	100%	100%	60%	
Philosophy											3.03
No. filing Green Sheet	13	9	7	7	11	5	5	3	4	14	
Pct. w/degree by 1970	8%	22%	43%	57%	82%	80%	100%	67%	100%	93%	
Slavic											2.72
No. filing Green Sheet	—	4	3	3	3	—	4	5	—	—	
Pct. w/degree by 1970	—	0%	0%	33%	0%	—	25%	80%	—	—	
Spanish & Portuguese											3.13
No. filing Green Sheet	2	2	4	1	—	7	6	1	2	12	
Pct. w/degree by 1970	0%	100%	0%	100%	—	86%	100%	100%	100%	92%	
SOCIAL SCIENCES											3.01
No. filing Green Sheet	65	71	66	63	61	59	54	44	22	173	
Pct. w/degree by 1970	9%	37%	71%	76%	72%	80%	81%	82%	100%	89%	
Anthropology											3.09
No. filing Green Sheet	4	9	10	6	4	4	3	4	2	12	
Pct. w/degree by 1970	0%	11%	70%	83%	50%	50%	100%	100%	100%	75%	
Communication											3.27
No. filing Green Sheet	6	4	6	1	4	3	3	1	1	13	
Pct. w/degree by 1970	17%	75%	100%	100%	100%	100%	67%	100%	100%	100%	
Economics											3.04
No. filing Green Sheet	11	13	7	10	11	13	15	11	2	33	
Pct. w/degree by 1970	9%	46%	57%	90%	82%	85%	80%	82%	100%	79%	

Food Research											2.53
No. filing Green Sheet	2	7	2	2	2	5	—	—	2	10	
Pct. w/degree by 1970	0%	0%	50%	50%	100%	40%	—	—	100%	80%	
Political Science											3.07
No. filing Green Sheet	12	7	9	18	12	7	9	12	5	31	
Pct. w/degree by 1970	0%	0%	33%	50%	33%	57%	44%	67%	100%	81%	
Psychology											2.99
No. filing Green Sheet	21	25	25	18	24	20	16	14	10	56	
Pct. w/degree by 1970	19%	60%	88%	89%	88%	100%	100%	93%	100%	100%	
Sociology											2.92
No. filing Green Sheet	9	6	7	8	4	7	8	2	—	18	
Pct. w/degree by 1970	0%	17%	57%	88%	50%	71%	88%	50%	—	94%	
PHYSICAL SCIENCES											3.26
No. filing Green Sheet	130	115	103	102	74	77	65	72	46	294	
Pct. w/degree by 1970	15%	52%	82%	96%	96%	94%	95%	97%	89%	95%	
Applied Physics											2.90
No. filing Green Sheet	22	12	8	4	3	1	—	—	—	—	
Pct. w/degree by 1970	14%	25%	75%	100%	100%	100%	—	—	—	—	
Biological Sciences[e]											4.44
No. filing Green Sheet	11	12	14	15	12	9	9	12	8	66	
Pct. w/degree by 1970	27%	50%	100%	100%	100%	100%	100%	92%	75%	98%	
Chemistry											2.76
No. filing Green Sheet	34	26	19	23	14	14	19	13	13	57	
Pct. w/degree by 1970	24%	81%	100%	100%	100%	100%	89%	100%	100%	93%	
Computer Science											2.84
No. filing Green Sheet	21	8	12	6	1	—	—	—	—	—	
Pct. w/degree by 1970	10%	13%	67%	83%	100%	—	—	—	—	—	
Mathematics											3.08
No. filing Green Sheet	8	23	13	24	19	19	13	7	6	34	
Pct. w/degree by 1970	0%	65%	92%	96%	89%	84%	100%	100%	67%	97%	
Physics											3.57
No. filing Green Sheet	22	25	21	21	16	20	18	25	16	101	
Pct. /degree by 1970	9%	44%	62%	95%	94%	100%	94%	96%	94%	94%	

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[e] Starting with 1969, includes degrees awarded in Biophysics. As an independent doctoral program, Biophysics granted 12 Ph.D.'s between 1961 and 1969, which are not reflected in the above statistics.

TABLE 3 (cont.)

School and Department	Year Green Sheet was filed 1969	1968	1967	1966	1965	1964	1963	1962	1961	1960 and earlier	Average no. of years to Green Sheet
PHYSICAL SCIENCES (cont.)											
Statistics											2.49
No. filing Green Sheet	12	9	16	9	9	14	6	15	3	36	
Pct. w/degree by 1970	8%	33%	75%	89%	100%	86%	100%	100%	100%	94%	
EDUCATION[4]											3.29
No. filing Green Sheet	71	60	47	45	29	27	16	11	16	80	
Pct. w/degree by 1970	1%	27%	55%	73%	76%	78%	94%	100%	94%	84%	
ENGINEERING											2.82
No. filing Green Sheet	197	207	174	170	136	137	114	114	93	320	
Pct. w/degree by 1970	7%	47%	71%	83%	88%	96%	91%	94%	98%	93%	
Aeronautics and Astronautics											3.35
No. filing Green Sheet	26	25	28	21	22	24	15	5	9	8	
Pct. w/degree by 1970	4%	60%	86%	86%	95%	100%	100%	100%	100%	100%	
Applied Mechanics											2.67
No. filing Green Sheet	8	13	7	13	8	11	10	7	7	48	
Pct. w/degree by 1970	13%	77%	86%	77%	86%	100%	90%	100%	100%	96%	
Chemical Engineering											2.61
No. filing Green Sheet	3	16	6	9	3	1	3	1	6	2	
Pct. w/degree by 1970	0%	81%	100%	100%	100%	100%	67%	100%	100%	100%	
Civil Engineering											2.86
No. filing Green Sheet	25	18	25	17	18	18	10	10	11	24	
Pct. w/degree by 1970	24%	78%	64%	82%	89%	89%	80%	90%	100%	83%	
Electrical Engineering											2.62
No. filing Green Sheet	67	77	62	56	53	52	40	69	44	198	
Pct. w/degree by 1970	3%	23%	61%	80%	85%	96%	95%	91%	98%	93%	
Engineering-Economic Systems											3.68
No. filing Green Sheet	6	6	6	3	1	—	1	—	—	—	
Pct. w/degree by 1970	0%	33%	83%	67%	0%	—	100%	—	—	—	

Industrial Engineering											3.01
No. filing Green Sheet	10	9	8	10	4	3	6	3	1	6	
Pct. w/degree by 1970	10%	56%	88%	70%	100%	100%	83%	100%	100%	92%	
Materials Science											3.25
No. filing Green Sheet	19	19	7	11	7	8	16	4	3	12	
Pct. w/degree by 1970	5%	63%	57%	82%	71%	88%	94%	100%	100%	92%	
Mechanical Engineering											2.93
No. filing Green Sheet	16	13	14	21	16	16	9	15	12	22	
Pct. w/degree by 1970	6%	47%	71%	95%	88%	100%	78%	100%	92%	95%	
Operations Research											2.39
No. filing Green Sheet	17	11	11	9	4	4	4	—	—	—	
Pct. w/degree by 1970	6%	28%	73%	78%	100%	100%	100%	—	—	—	
EARTH SCIENCES											2.42
No. filing Green Sheet	31	33	19	21	24	25	21	12	24	89	
Pct. w/degree by 1970	6%	27%	58%	71%	71%	84%	81%	83%	92%	93%	
Geology											2.24
No. filing Green Sheet	18	20	14	8	17	15	17	10	19	79	
Pct. w/degree by 1970	0%	20%	50%	63%	59%	80%	76%	90%	95%	94%	
Geophysics											2.81
No. filing Green Sheet	—	4	1	7	5	2	4	1	2	8	
Pct. w/degree by 1970	—	0%	0%	71%	100%	100%	100%	0%	100%	100%	
Hydrology											1.80
No. filing Green Sheet	3	—	—	2	—	—	—	—	—	—	
Pct. w/degree by 1970	67%	—	—	100%	—	—	—	—	—	—	
Mineral Engineering											3.63
No. filing Green Sheet	4	7	1	3	1	4	—	—	—	1	
Pct. w/degree by 1970	0%	57%	100%	67%	100%	75%	—	—	—	0%	
Petroleum Engineering											2.61
No. filing Green Sheet	6	2	3	1	1	4	—	1	3	1	
Pct. w/degree by 1970	0%	50%	100%	100%	100%	100%	—	100%	67%	100%	
MEDICINE											
No. filing Green Sheet	23	25	20	20	19	17	15	14	10	46	
Pct. w/degree by 1970	0%	48%	80%	60%	79%	88%	93%	93%	90%	80%	

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[d] Includes Ed.D. recipients.

TABLE 3 (cont.)

School and Department	Year Green Sheet was filed										Average no. of years to Green Sheet
	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960 and earlier	
MEDICINE (cont.)											
Anatomy											
No. filing Green Sheet	2	3	1	1	1	—	—	—	2	2	
Pct. w/degree by 1970	0%	33%	100%	100%	100%	—	—	—	100%	50%	
Biochemistry											
No. filing Green Sheet	4	4	3	3	3	3	3	2	1	1	
Pct. w/degree by 1970	0%	25%	67%	67%	100%	100%	100%	100%	100%	100%	
Genetics											
No. filing Green Sheet	2	2	—	—	—	3	—	—	1	1	
Pct. w/degree by 1970	0%	50%	—	—	—	100%	—	—	100%	100%	
Medical Microbiology											
No. filing Green Sheet	4	4	3	3	4	2	2	5	2	10	
Pct. w/degree by 1970	0%	50%	100%	67%	75%	100%	100%	100%	50%	100%	
Neurological Sciences											
No. filing Green Sheet	4	4	2	1	—	—	1	—	—	—	
Pct. w/degree by 1970	0%	50%	100%	100%	—	—	100%	—	—	—	
Pharmacology											
No. filing Green Sheet	2	3	3	3	1	2	—	—	1	1	
Pct. w/degree by 1970	0%	100%	100%	100%	100%	100%	—	—	100%	100%	
Physiology											
No. filing Green Sheet	1	1	4	—	3	1	2	2	1	6	
Pct. w/degree by 1970	0%	100%	100%	—	100%	100%	100%	100%	100%	83%	
Speech and Hearing											
No. filing Green Sheet	4	4	4	9	7	6	7	5	2	25	
Pct. w/degree by 1970	0%	25%	25%	33%	57%	67%	86%	80%	100%	72%	
BUSINESS											
No. filing Green Sheet	22	14	6	24	14	9	10	14	3	34	
Pct. w/degree by 1970	18%	21%	83%	92%	93%	89%	90%	93%	100%	94%	
GRADUATE SPECIAL											
No. filing Green Sheet	4	6	6	7	6	10	6	2	2	22	
Pct. w/degree by 1970	0%	50%	100%	43%	67%	80%	100%	100%	50%	73%	

APPENDIX II-3

Minority Graduate Enrollment at Stanford, 1968-1972

TABLE 1

Minority Graduate Enrollment at Stanford and Certain Other Institutions, 1970–71

Institution	Blacks	Other minorities	Total enrollment	Minority enrollment as pct. of total enrollment
Berkeley	372	475	9,135	9.3%
Chicago	302	167	4,906	9.6
Columbia	320	301	6,312	9.8
Teachers College	152	90	2,076	11.7
Harvard	455	198	8,328	7.8
Michigan	534	104	9,327	6.[illegible]
Princeton	51	22	1,489	4.9
Stanford	*140*	*148*	*4,461*	*6.5*
Yale	191	50	3,670	6.6

SOURCE: Reports submitted by colleges and universities to the Office for Civil Rights of the Department of Health, Education, and Welfare.

TABLE 2

Minority Graduate Enrollment at Stanford in 1971–72, by School

School	Minority enrollment	Total enrollment	Minority enrollment as pct. of total enrollment
Business	51	636	8.0%
Earth Sciences	1	156	0.6
Education	68	483[a]	14.1
Engineering	37	1,354	2.7
Humanities and Sciences	109	1,426	7.6
Law	32	517[b]	6.2
Medicine	36	421	8.6
TOTAL	334	4,993	6.7%

SOURCE: Academic Planning Office and Graduate Division.

[a] Includes 10 Education-Business.
[b] Includes 36 Law-Business.

TABLE 3
Minority Graduate Enrollment at Stanford in 1968–71, by School

Minority	Business	Earth Sciences	Education	Engineering	Humanities and Sciences	Law	Medicine	Total
Native Americans:								
1968	—	—	2	2	—	—	2	6
1969	—	—	—	—	—	1	1	2
1970	1	—	1	—	1	1	1	5
1971	2	—	1	1	2	3	2	11
Blacks:								
1968	5	1	13	6	20	9	3	57
1969	10	1	25	14	47	9	10	116
1970	22	—	20	18	62	13	15	150
1971	31	—	40	29	75	15	19	209
Chicanos:								
1968	—	—	6	3	5	4	2	20
1969	1	—	13	—	7	6	5	32
1970	9	—	12	2	16	7	10	56
1971	18	1	27	7	32	14	15	114
All minorities:								
1968	5	1	21	11	25	13	7	83
1969	11	1	38	14	54	16	16	150
1970	32	—	33	20	79	21	26	211
1971	51	1	68	37	109	32	36	334

SOURCE: Academic Planning Office and Graduate Division.

NOTE: 1970 totals are somewhat more accurate than the HEW figures for Stanford cited in Table 1.

APPENDIX V-1

Table of Contents for *Guide to Graduate Study in Biology* (May 1971)

I REQUIREMENTS FOR THE DEGREE
  1. Registration
  2. In Absentia Registration
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  14. Appointment of Dissertation Reading Committee
  15. Residency Requirement
  16. Terminal Graduate Registration
  17. Dissertation
  18. University Oral Examination
  19. Registration During Final Quarter
  20. Statement Concerning Conferral of Degrees
  21. Sources of Information
  22. Miscellaneous
  23. People You Should Know

II DESCRIPTION OF COURSES

III DEPARTMENTAL FACILITIES

IV RESEARCH INTERESTS OF FACULTY

APPENDIX V-2

Admission to Candidacy

Memorandum from A. E. Siegman to Committee on Assessment and Reporting

When a student first begins his graduate work at Stanford toward the Ph.D., he might initially be called a "prospective Ph.D. student," or a "prospective Ph.D. candidate," or whatever label one might choose to denote his initial status.

It appears to be the clear consensus of our committee that by the end of a student's second year in this status a department should, in virtually every case, have made a formal and more or less binding assessment of the capability and suitability of the individual for Ph.D. work; and that the department should formally convey this assessment to the individual, and also to the University. In other words, the student's status should undergo a formal change at this time.

It seems clear to me that such a student, when he has successfully passed this assessment, has then become a fully qualified "candidate" for the Ph.D., in any meaningful interpretation of that term. There may be further departmental requirements he must satisfy before he can be recommended for a degree or perhaps before he can even begin dissertation work in some cases; and he certainly has a dissertation still to do. But, he is no longer in probationary status as a qualified candidate for the Ph.D.

If the above description is accurate, it seems to me by far the most orderly procedure (from the point of view of the student, the Graduate Division, and the University) and also the simplest and most useful procedure to say that it is this point in time that should henceforth be considered "Admission to Ph.D. Candidacy," in the full legalistic sense, so far as the Graduate Division and the University are concerned. I recognize this is not our order of procedure now; I am arguing that our future order of procedure—our future definition of "Admission to Ph.D. Candidacy"—should be changed as described here.

Some of my arguments in favor of this change include:

1. *Simplicity.* Without this change, two separate communications to the Graduate Division concerning each student will be required:* formal

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* Assuming our second-year evaluation proposal is to be adopted.

notice of favorable action in the second-year assessment, and then, at some ill-defined later time, formal Application for Candidacy. This latter document will not be of much utility, because with the departmental policies on Application for Candidacy varying widely, the presence or absence of formal candidacy in a given student's University file will not convey much useful diagnostic information, e.g., to the Dean of Graduate Studies—and aiding him in having an overview of the graduate programs is one of the purposes of these records.

2. *Record-keeping advantages.* With the proposed new interpretation of Admission to Candidacy most Ph.D. students can become more clearly classifiable as either "Ph.D. candidates" (in the formal sense) or as "Ph.D. pre-candidates" (which might be a convenient catchphrase to describe Ph.D. students before Admission to Candidacy). The advantage to University census-taking and data-gathering might not be trivial.

3. *Usefulness as a Ph.D. milestone.* In other discussions we have been emphasizing the desirability of a four-year Ph.D.—at least as a target, if not something that can always be obtained. Given this, the proposed Admission to Candidacy at the end of the second year can become a conveniently placed milestone about halfway, or a little less, to the final goal. One can then ask, for example, how many students at Stanford are more than X years past Candidacy, or other useful questions—and with a more uniform definition of Candidacy, the answers to such questions will be more meaningful.

The major objection to this proposed change, and my counterargument, are as follows:

4. *Possible disadvantages to the departments.* Objection: Some departments want to withhold Candidacy until various departmental requirements are satisfied, e.g., language or course requirements that may not always be satisfied at the time of the second-year evaluation. Rebuttal: Such departments are using a University Candidacy requirement, which ought to serve University purposes, as an inappropriate and unnecessary tool to serve purely departmental purposes. We want it to be University policy that a student is clearly accepted or rejected as a viable Ph.D. Candidate at the end of the second year. Formal University Admission to Ph.D. Candidacy would clearly mark this acceptance. Nothing in this prevents a department from having its own further requirements to be completed before it will recommend a student for the degree, or even before it will let its students begin dissertation research. The department has more than sufficient power to enforce such requirements under our "adequate progress" clauses, as well as under its basic powers to set requirements for the Ph.D. degree.

As a method of aiding the department and the student in this regard, it might be very desirable to have space on the Admission to Candidacy form for each student for the department to spell out the remaining requirements that his department expects of him. The language on the form might be something like:

"In addition to the university requirements as to the University Oral Exam and the completion of an acceptable Ph.D. dissertation, it will also be necessary for the candidate to complete the following specific departmental requirements:

____
____
____
____"

This would make any unfulfilled departmental requirements clearly known to the student, the University, and the department files.

I recommend adoption of the above interpretation of Admission to Ph.D. Candidacy as an SGES/CAR proposal.

September 22, 1971

APPENDIX V-3

A Brief on Graduate Student Evaluation Procedures

Memorandum from Leonard Berk to Committee on Assessment and Reporting

Evaluation procedures such as quals and orals are not mere devices for collecting information. They share with final examinations and dissertations the character of ritual tasks, special performances from which faculty members may extract information for assessing strengths and weaknesses, but whose outcome for the student is also the assignment of a status designation. Hence, while it makes sense to permit students access to the information and the criteria that faculty members employ in assigning them their grades or ranks or whatever, providing such information will not forestall the trauma that accompanies finals, quals, and orals (to say nothing of the dissertation which, because it is ideally an original work, admits no clear specification of criteria). What traumatizes students is the assignment of a status; any procedure which provides the occasion for assigning a status—think of tenure evaluations—is potentially a traumatic event, no matter how clearly the criteria have been spelled out nor how compassionate the evaluators may be. The student becomes a marked man, and he knows it.

I suggest that graduate student life becomes more miserable in direct relation to the number of times a student must undergo the ritual assignment of status and in inverse relation to his understanding what his new status amounts to. The latter understanding can be provided only through candid advising either by faculty or by senior graduate students. I contend, therefore, that adding a new formal evaluation procedure as a remedy for inadequate advising construes the whole business in reverse, and ought to be abandoned.

January 10, 1972

APPENDIX V-4

The University Oral Examination and Some Remarks on Specialization

Memorandum from Leonard Berk to Committee on Assessment and Reporting

Prompted by last week's observation that we didn't really know whether or not there had been a golden age of scholarship when the unity of knowledge shone through each piece of specialist research (or something like that), I've done some reading. The results I present here as a *Hasty History of Specialization in American Graduate Education with Special Attention to the Origins of the University Oral at Stanford.*

The answer is, no: there never was a golden age. The last quarter of the nineteenth century, which was to see the rise of research in American universities, had already achieved a sharp split between the sciences and the humanities. What unity the sciences themselves possessed was regarded by graduate professors of the period as a sign of intellectual primitiveness. But as research caught on and departments divided and subdivided, the sciences advanced until, by the start of the twentieth century, scientists in the various subfields no longer wanted to talk to each other, and the problem of intellectual unity was solved.

Graduate schools like those at Hopkins, Harvard, Cornell, and Chicago were established in emulation of German universities whose ideal of disinterested scholarship appeared to be sanctified in the name of progress. Albion Small, first head of the Sociology Department at the University of Chicago, in 1905: "The prime duty of everyone connected with our graduate schools is daily to renew the vow of allegiance to research ideals. . . . The first commandment with promise for graduate schools is: Remember the research ideal, to keep it holy!"

Keeping it holy meant remembering that the very mark and condition of the advance of scholarship was the process of specialization. William G. Hale, head of the Department of Latin in Chicago, in 1896:

"In every direction, investigation has been pushed so far that subjects once thought to constitute a specialty are now regarded as groups of specialties. . . . To say, then, that a man is a specialist in Latin or a specialist in History is to say almost nothing about his equipment. He must have a certain knowledge of the most general province in which he works; but in addition he must have an extended and minute knowledge of what has been done and what is doing in some one field of that province. This, then, is the second condition of successful graduate work. [What, you ask, was the first? "To begin with, the student must be gifted by nature with a certain amount of celestial fire."]* It is not sufficient that the professed leader of [graduate work] should be an estimable gentleman, he must have the knowledge of a specialist, in the severest sense of the word."

No one would have denied that success in research demanded specialized knowledge. Scrupulous sifting through minutiae was commonly taken to be both the defining characteristic of research and the researcher's proper virtue. But anyone familiar with research and researchers would have recognized Hale's argument as a salespitch for the benefit of potential students and benefactors of the university. Within the universities themselves, professors affirmed that the price of becoming specialized was often a severe narrowing of one's intellectual perspective, and demonstrated by their practice that the rewards of specialization were best measured in dollars. Taken as reports on the state of research, such remarks as Hale's lacked candor. They drew the fire of those academics who regarded the growth of graduate training in research as a threat, and who were therefore infuriated when they found the case for specialist training overstated. The philosopher R. M. Wenley, of Michigan, in 1907:

"Again, the younger lions have roared at us that the university exists to train specialists. . . . But, what kind of specialist? The psychologist who understands all about cones and rods and nerve endings and reflex action, but who suffers cold shivers within ten thousand miles of the human mind? The Grecian . . . who will tell you to a fraction the recurrence of pronouns in Aeschylus, but to whom the meaning of *Prometheus* has not so much as occurred? . . . What do we mean, usually, by intellectual success? Let us confess, little more than abstract researches, wrought with elaborate care and artifice, yet devoid of essential relations or end, and applauded because carried out in accordance with the technical instructions laid down by journeyman methodology. For the rest, success and dollars seem interchangable terms."

But humanist critics like Wenley who saw the point of graduate education, and deplored it, could do nothing about it. They were proposing only that graduate education, like undergraduate liberal arts education, aim at enriching the perceptions and at satisfying the curiosity of the students who undertook it. But such proposals were beside the point, which was that graduate schools were institutions to support a research faculty; the training of students was important, but clearly secondary. What stood at issue, in the case of both faculty and students, was what a man produced, not what he knew.

In 1904, when a group of adherents to philosophical idealism sought to organize the St. Louis Congress of Education precisely in order to celebrate the unity underlying scholarship in all the particular sciences, they succeeded only in demonstrating its absence. The invited speakers, specialists, paid lip service to the unity of knowledge, and then proceeded to talk about the advance of knowledge in their own fields.

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* The appropriate opening question on our graduate admissions form is clear: "What evidence is there that you are gifted by nature with an adequate amount of celestial fire?"

Stanford opened in 1891 with the intention of providing for systematic graduate study, a precedent on the West Coast. Its graduate programs were still small and capriciously administered in 1900. Its President, David Starr Jordan, was among the most paternal administrators of his time. There was discontent among faculty at Stanford attributable directly to his autocratic governance of the University. Jordan himself appointed department Chairmen who were then free to dictate department policy if they chose. As a result, mistrust between the Chairman and his faculty was common. The only authority left to a faculty member was the authority to act as an expert. Stanford had granted each professor ultimate say on matters pertaining to his own specialization, and the matters most clearly included were the training and evaluation of the graduate students working under him.

Since department policy was subject to no coordinating agency in the case of graduate study, procedures varied. The Ph.D. was officially granted by the University, yet graduate programs were entirely in the hands of the departments. And while the dissertation was universally required, orals were given or not as the department saw fit. Among faculty the consequences were literally scandalous. Rumors circulated about students shopping departments for the least demanding requirements and about departments fishing for students with offers of easy degrees. (The lure of money was unavailable because the trustees had refused on principle to pay for fellowships or scholarships.)

So in May 1900 a group of faculty proposed that the University as a whole take responsibility for administering the A.M. and the Ph.D. in order to assure the reputation of Stanford degrees. Factional splits emerged among the faculty, the two primary factions concerned, respectively, with establishing some mechanism for University control of graduate degrees, and with fending off the threat to academic freedom implicit in proposals to constrain departmental autonomy. In October, President Jordan asked the faculty to comment on four schemes he proposed for allocating authority for the graduate program. One would have maintained the autonomy of the departments. The others proposed to invest various degrees of authority in the hands of an interdepartmental committee or council. Responses to Jordan's request are in the University Archives, and they reveal a good deal about the circumstances which prompted the University to constrain departmental autonomy in the granting of graduate degrees.

Mary Roberts Smith, a sociologist on the Stanford faculty who had received her doctorate from the University two years before, confided to Jordan that her support for extradepartmental control of graduate programs grew from her experience "as one who took a degree under conditions illustrating all the evils of careless administration." Most of the faculty responding to Jordan were similarly in favor of some scheme to limit departmental autonomy.

Shortly after requesting faculty opinion, Jordan invested the new Committee on Graduate Study with authority to oversee the graduate programs and evaluations at the time of the thesis, what has become the university oral. Opponents of the Committee had protested, sometimes passionately, that academic freedom would be compromised by any plan which removed sole responsibility for graduate student evaluation from the hands of the experts. Julius Goebel, German Literature and Philology:

"My chief objection against a standing Committee on Graduate Study is that it is contrary to the modern university idea, which knows of no higher authority in the various branches of science outside of the individual professors as the representatives of these various branches of science. A committee is able to form a general opinion on the candidate's examination, but it is not competent to express an opinion on the thesis or other special work of the candidate. The moment the committee does this it declares itself to be a tribunal not only over the candidate, but also over the major professor. No scholar of reputation and self-respect can tolerate this. . . . Committee rule works well in matters of administration, but it has no place whatever in matters of scientific research or scientific truth. Committees who have the power to overrule the expert, and thus to assume a superior standard of truth, are ecclesiastical and medieval. It was in fact a *standing committee*, especially privileged by the Pope, which had the right to confer academic degrees in the Universities of the Middle Ages. Does Stanford University, under the leadership of Mr. Howard and a few others, wish to go back to the thirteenth century? As a Protestant and scholar I feel compelled to stand up for unlimited freedom from outside authority in matters of truth, recognizing only the authority of my own conscience and of my scientific convictions. And I know that all the *true* scholars of our University are on my side."

Again and again while reading these letters one gets the sense that the exclusive claims of the specialist are being advanced in the interest of defending academic home turf. The introduction of collective responsibility for granting graduate degrees, the precedent for current oral examination procedures, was aimed at moderating the excesses of specialization. They were political excesses, let it be noted. No one would have dreamed of trying to remedy the fragmentation of knowledge.

November 15, 1971

APPENDIX V-5

Rules for Examinations for the Ph.D. Degree

Ph.D. examination procedures shall provide a meaningful check on progress at the various stages in Ph.D. programs as administered by departments. Since considerable variation exists in programs among various departments, only general rules are stated.

1. Departmental qualifying procedures shall include a General Qualifying Examination, which may be written and/or oral. This examination shall be administered by the department relatively early in the student's career and shall be relatively broad in scope.

2. Each Ph.D. candidate must also pass a University Oral Examination, which *may include any one or a combination* of the following elements.

(a) An *Area Examination* in the student's area of special interest, or his dissertation area in a general sense.

(b) A *Defense of a Dissertation Proposal* covering: *content* relevant to the area of study, *rationale* for the proposed investigation, and *strategy* to be employed in the research.

(c) *Dissertation Defense*, to be presented upon completion of all or a substantial portion of the dissertation work. Normally, a draft of the dissertation should be available for the examining committee well in advance of the examination.

A portion of the University Oral Examination may take the form of a public seminar. However, this examination shall also include at least some period of private questioning by the official examining committee followed by a secret ballot as to whether the candidate passed or failed the examination. The chairman of the University Oral Examination is normally from another department, and is appointed by the Graduate Division.

3. Departments which do not at present require a formal Dissertation Proposal before a dissertation is begun are encouraged to institute such a procedure for the benefit of the student and the department. Such a Proposal would normally include the definition of the problem, the goals of the particular work, the proposed methods of procedure, and an agreed terminal point for the work in general terms including a realistic probable completion date.

4. Current examination procedures and other requirements for Ph.D. which are adopted by each department (or program) authorized to award the Ph.D. degree shall be filed upon adoption in writing in the office of the Secretary of the Committee on the Graduate Division. Subsequent major changes shall also be so filed.

Approved: 2/15/68 by the University Committee on the Graduate Division; 10/10/68 by the Academic Senate.

APPENDIX V-6

General Directions for Chairmen of University Oral Examinations of Ph.D. Candidates

1. *Committee Personnel.* If there is no minor, the major department must be represented by at least four examiners. If there is a minor, the major department must be represented by at least three examiners and the minor department by at least one. (The names of the official examiners are listed on Form G23 in the chairman's folder.) The chairman is urged to participate in the questioning. Any member of the Academic Council may participate in the questioning and the voting. If the examination is not a public seminar, attendance is limited strictly to members of the examining committee and members of Academic Council.

2. *Examination Procedure.* The examination should be conducted according to the major department's adopted practice. (Separate sheets concerning department and University procedures are in this folder.) If the examination is to be a defense of dissertation, questioning on the dissertation may lead to questions on the general area of the candidate's research.

3. *Length of Examination.* The examination should *not exceed* three hours in length. If there is a minor, its examiner(s) should be allowed approximately half as much time as the major department's examiners. The chairman should arrange a brief recess during lengthy questioning periods.

4. *Voting Procedure.* Five members of the examining committee (four department examiners and the chairman) constitute a quorum. To be eligible to vote, an examiner must have been present throughout a substantial part of the examination and during the final discussion. It is the responsibility of the chairman to determine who is eligible to vote. The vote is to be by secret ballot in all cases. A three-fourths vote of those qualified to vote and voting (including the chairman) is necessary to pass the candidate, except that if three-fourths is not a whole number, a favorable vote by the next lower whole number is sufficient. Necessary to pass candidate: 3 favorable votes out of 5, 4 out of 6, 5 out of 7, 6 out of 8.

5. *Reporting the Result of the Examination.* A report is to be filled out by the chairman on Form G24 (included in the chairman's folder) and returned to the Graduate Study Office in the folder. A formal report is issued

later by that office to the candidate. Any commendatory committee opinion (e.g., "Passed with great distinction") reported by the chairman on Form G24 will be transmitted to the candidate. It is common practice for the candidate's adviser to inform the candidate of the result shortly after the examination—at some prearranged location away from the site of the examination.

APPENDIX V-7

Summary of Departmental Ph.D. Oral Examination Procedures

The information on the following pages is based on a survey of materials in the Graduate Division Office that was conducted by SGES in the summer of 1971. Although our information was neither complete nor up-to-date (and in some cases has been superseded since the SGES survey), we thought it worth reproducing as indicative of the great variety of oral examination procedures in use at Stanford.

Department	Nature of Ph.D. Oral	Timing	Format	Remarks
Aeronautics and Astronautics	Test of knowledge and understanding of depth of chosen field		Conventional	Later public seminar on dissertation results also required
Anatomy	Dissertation defense	Dissertation work completed	Conventional	
Anthropology	Three options: (a) as part of department special exam; (b) dissertation proposal; (c) dissertation defense	No later than 1st quarter of 3d year	Conventional	
Applied Mechanics	Dissertation defense	Dissertation completed	Seminar	
Applied Physics	Dissertation defense	Draft of dissertation available	Seminar	
Art	Dissertation defense	Dissertation completed	Conventional	
Asian Languages	Dissertation defense	Acceptable dissertation completed in draft form	Conventional	
Biochemistry	Dissertation defense	Dissertation work completed; dissertation not necessarily written	Seminar	
Biological Sciences, including Biophysics	Dissertation defense plus area of specialization	Dissertation in final draft form and provisionally approved	Seminar	Simple majority vote passes

Business	Dissertation proposal	Dissertation about ⅓ done	Conventional (2–2½ hrs.)	Specifically "*not* a general examination." Principal research adviser writes advance memo outlining agenda for exam
Chemical Engineering	Dissertation defense	Dissertation completed	Seminar	
Chemistry	Dissertation defense	Dissertation completed in final form	Seminar	
Civil Engineering	Dissertation proposal (dissertation defense option exists)	End of 2d year or early in 3d year	Conventional	
Classics	Dissertation proposal and general topics	Any time after filing of Green Sheet	Conventional	
Computer Science	Dissertation defense	Dissertation substantially completed	Conventional	
Drama	Comprehensive exam covering four fields	Following written qual. exams on same four fields	Conventional	
Economics	Combination of dissertation proposal and dissertation defense	Substantial portion of the dissertation work to be available	Conventional	
Education	Options: (a) area exam; (b) dissertation proposal; (c) dissertation defense	(a) After most course work is completed; (b) after establishment of candidacy; (c) dissertation completed and signed	Conventional	Areas specified in advance
Engineering-Economic Systems	Dissertation defense	Dissertation work completed	Conventional	

Department	Nature of Ph.D. Oral	Timing	Format	Remarks
English	Student's period or genre, plus dissertation proposal	3d year	Conventional	Tests student's knowledge of his particular period . . . or genre. Limits on exam area set in advance by student and his adviser
Food Research	Dissertation proposal	During 3d year	Conventional	
French	Assigned special topic	Soon after department written exams	Conventional (in French)	Primarily explication and discussion on a page or two of text, made known to the student on the morning of the exam
Geology	Dissertation defense	Dissertation work essentially completed	Conventional	
German Studies	"Dissertation area," plus general topics	Prior to the dissertation	Conventional	
History	Major and minor fields	Not more than one year after admission to Ph.D. program	Conventional	
Hydrology	Dissertation proposal (dissertation defense option exists)	End of 2d year or early in 3d year	Conventional	
Industrial Engineering	Dissertation defense (primarily)	After dissertation given tentative approval	Conventional	
Linguistics	Dissertation defense	Dissertation draft available, but before final version is written	Conventional	
Materials Science	Dissertation defense	Dissertation completed and fully approved	Seminar	

Mathematics	Dissertation defense	Dissertation completed	Conventional	
Medical Microbiology	Dissertation defense	Dissertation work completed	Conventional	
Mineral Engineering	Dissertation proposal	Within one year after completion of qualification procedures	Conventional	Public seminar at end of dissertation also required
Music	Dissertation proposal (50%), plus assigned topic (50%)	—	Conventional	Assigned topic is given candidate 24 hours in advance
Neurological Sciences	Dissertation defense	Dissertation completed	30-minute presentation plus questions	
Operations Research	Assigned special topic . . . *other than* dissertation area	Within six months after qualification exams	Oral presentation plus questioning	Special topic is assigned two months in advance
Pharmacology	Dissertation defense	Dissertation work completed	Seminar	All members of department attend
Philosophy	Dissertation defense	Substantial portion of dissertation work completed	Conventional	
Physics	Dissertation defense	Dissertation completed (not necessarily in final form)	Seminar	
Physiology	Combination of area exam plus dissertation defense	Dissertation completed	Seminar plus "private intense questioning in depth"	Examiners previously read dissertation thoroughly

Department	Nature of Ph.D. Oral	Timing	Format	Remarks
Political Science	Between dissertation proposal and dissertation defense	Sometime during dissertation work; varies from case to case	Conventional	Timing of exam depends on nature of dissertation problem
Psychology	Dissertation proposal (dissertation defense option exists)	End of 3d or beginning of 4th year	Conventional	
Slavic	Dissertation proposal		Conventional	
Sociology	Area exam		Conventional	
Spanish and Portuguese	Dissertation defense	Dissertation completed	Conventional	
Speech and Hearing Science	Dissertation defense	Dissertation in final draft form	Conventional	
Statistics	General exam on three or four selected subject areas	Variable: before or after dissertation work	Conventional	

Procedures for Terminating Ph.D. Candidates and for Granting Admission to Candidacy

Memorandum from Lois S. Amsterdam to Committee on Assessment and Reporting

My office has been confronted with the most appalling examples of the lack of fair and appropriate procedures for determining academic competence of Ph.D. candidates, and for terminating candidates. There have been instances where the student was never formally evaluated by the department before the termination; students are ill-advised about department requirements, examinations, and orals; departments rely heavily on the academic adviser alone for preparation of examinations, for evaluation of those examinations, and for total evaluation; students are confused and sometimes desperate because they do not know what is expected of them; terminations are haphazard and lack any semblance of fair process; academic adequacy is sometimes less important in a termination decision than other factors which are often irrational and inappropriate.

SGES is now probing all these problem areas, through exhaustive research and investigation. I have discussed some of these problems with Professors Carlsmith and Mellor, and while I would be happy to discuss any of the above-mentioned problems with the Committee, I will focus here on termination procedures and procedures for determining whether to extend candidacy.[*]

TERMINATION PROCEDURES

I. *Termination Vote by Whom*

By majority vote of all faculty in a department who are members of the Academic Council.

II. *How the Termination Occurs*

A. Termination Hearing

1. In a small department the hearing would be before the entire faculty; in a large department, the department can opt for the hearing to be held before a standing committee established for that purpose.

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[*] When a student's Ph.D. candidacy is not renewed, termination procedures attach.

2. The termination hearing is triggered by the Chairman of the department, who notifies the relevant faculty.

3. Written notification is also given by the Chairman to the student. This notification includes:

a. The student's right to appear at the termination hearing, with the opportunity of hearing the case against him, and the right to present his side, either orally or in writing.
b. The student's right, in preparation for the hearing, to see all papers that will be reviewed by the voting faculty in determining termination. This includes his departmental file, if one is kept. This does not include confidential material from sources outside the department, which were conveyed with the express indication that they were to be kept confidential. However, the substance of that material should be summarized for the student in a way which does not reveal the source. The departmental faculty cannot claim confidentiality for their own communications.

4. Minutes shall be taken at the hearing.

B. The Vote

After the hearing, the faculty will take a vote. Before the vote is taken, the voting members shall review the student's academic record, the minutes of the hearing, the student's case if presented in writing, and the departmental file.

III. *When the Vote is for Termination*

In a small department the student shall be notified by the Chairman in writing, and the notification shall include the underlying reasons for termination. The student shall also be notified that an appeal procedure exists if he wishes to pursue it.

In a large department, the standing committee shall report their recommendation to the faculty as a whole, which shall accept or reject that decision. If a termination recommendation is accepted the procedure is the same as above.

IV. *Appeal Procedure*

The Dean of Graduate Studies shall review the record of the hearing (academic record of the student, departmental file, minutes of the termination hearing, and the student's case if presented in writing) upon the student's request. The Dean shall speak to individuals *only if necessary* for clarification. If the Dean reviews the record and decides to affirm termination, he shall send his written decision to all concerned parties. Review may then be requested of the Provost, who will conduct his review in the same manner.

***

While departments will have greater flexibility in determining whether to grant candidacy in the first instance, there should be regular procedures followed in making that decision as well. There must be some assurance of fair process, and the absence of prejudicial and irrelevant considerations; this is a vital decision affecting the future professional career of a student.

PROCEDURES FOR DECIDING CANDIDACY

I. *Decision by Whom*

Same as Termination Procedure

II. *How Decision is Made*

A. Small Department

The faculty shall review the student's academic performance in the department and then vote. Minutes shall be taken.

B. Large Department

The department can opt for a standing committee to review academic performance and then make a recommendation to the faculty as a whole. Minutes shall be taken. The faculty then votes on candidacy.

III. *Notification and Review*

1. The Chairman notifies the student of the department's decision in writing. Reasons for denying candidacy will be stated as well as appeal procedures. The student may discuss the decision with the Chairman.
2. The student will be given a reasonable time to review his academic record and departmental file in the department and the minutes of the faculty review, and may present in writing a request for reconsideration to the faculty, or to the committee, stating his reasons for reconsideration.
3. This request may be denied.

IV. *Appeal*

If the request for reconsideration is denied, or accepted and the decision to deny candidacy is affirmed, the student may appeal in writing to the Dean of Graduate Studies, who shall review his petition, the minutes of the faculty review, and his record in the department. If the Dean affirms the decision to deny candidacy, the student may request review by the Provost. The Provost's review shall be discretionary.

December 14, 1971

APPENDIX V-9

Record-Keeping for Graduate Students

Memorandum from A. E. Siegman to Committee on Assessment and Reporting

At the present time the amount of formal record-keeping within the Graduate Division concerning the graduate students registered in the University, the various degrees toward which these students are proceeding, and their progress toward these degrees, may be described as ranking somewhere between primitive and nonexistent. Such elementary questions as the number of students in the University working toward Master's degrees, or the number of Ph.D. students in the University and their current status, can be answered only by laborious ad hoc surveys of all the individual departments. This lack of informative and available records makes it difficult to gather accurate and needed statistical information (concerning, for example, enrollment trends in the Graduate Division); makes responding to surveys and questionnaires a laborious task; makes long-range academic planning a difficult and uninformed process; and makes it that much easier for graduate students to become "lost" in the system.

To overcome some of these difficulties it would be very useful if, as one basic form of record-keeping, each graduate student in the University could be classified at each point in time according to some finite set of categories, generally related to the student's degree objective. The following set of categories is a tentative proposal for the type of classification system that would meet this objective:

M. *Master's degree candidates.* Referring primarily to all the one-year Master's degree programs in the University, including the Master of Arts (A.M.), the Master of Science (M.S.), and presumably the Master of Jurisprudence (J.M.).

I. *Intermediate degree candidates.* Referring essentially to all subdoctoral, two- or three-year graduate degrees, including the Engineer Degree and perhaps the Master of Educational Administration (M.Ed.Adm.), the Master of Fine Arts (M.F.A.), and the Master of Business Administration (M.B.A.).

DP. *Doctoral pre-candidates.* Those students working toward the Ph.D. degree but not yet formally admitted to candidacy.

DC. *Doctoral candidates.* Those Ph.D. students who have been admitted to candidacy.

P. *Professional school degree candidates.* Including the Doctor of Jurisprudence (J.D.) and the Doctor of Medicine (M.D.).

Consultation with the Registrar's Office has indicated that a simple one-letter coding to indicate the above classifications (or some similar set) could easily be recorded as an addendum to the existing graduate "Class Code" (which is either "5" for graduate status or "E" for terminal graduate) in the machine-readable Registrar's Office records for each graduate student.

It should perhaps be emphasized that the primary purpose of this particular piece of information will be for planning purposes, for statistical surveys, and for similar overall informational purposes, rather than as a formal or legal record of the academic status of any individual student. For example, a potential Master's degree student must at some point in his program file and obtain official approval of his Master's degree program (the "Orange Sheet") from the Graduate Division. The distinction between those Master's students who have and those who have not yet done this will not be considered in the overall category of "M" above.

There will also be some mild unavoidable ambiguities in any classification scheme such as the above. For example, there will be some students who intend to obtain both the Master's and the Ph.D. degrees. In this case such a student can be classified initially as either "M" (Master's) or "DP" (doctoral pre-candidate) according to the general practice and policy of his department. Thus, in the School of Engineering, where the M.S. degree is a widely used terminal as well as intermediate degree, such a student would probably be classified as "M" until such time as he receives the Master's degree, after which his status will be converted to "DP," since the general practice in Engineering seems to be to regard admission to the Ph.D. program beyond the Master's degree as a separate and distinct admission decision. On the other hand a student in, say, a Humanities department who is clearly considered by his department to be a Ph.D. degree student, but who will incidentally pick up a Master's degree along the way, can be classified from the beginning as "DP," since this seems a clearer indication of his overall status.

We believe that a scheme similar to that proposed here can be implemented at low cost, and that the advantages to University planning and record-keeping will be substantial. We recommend its immediate implementation.

August 10, 1971

APPENDIX VII-1

The Teaching Seminar and Teaching Experience

Memorandum from H. H. Skilling to Committee on Graduate Student Teaching

In the Applied Sciences and Engineering, about 30 per cent of the doctoral students enter college and university teaching as a life career. This figure has been approximately correct over several decades, and varies only slightly from department to department. In Electrical Engineering, where the opportunity for industrial positions is relatively large, the fraction may fall to 25 per cent. Over the years, the ratio has not changed greatly since the formation of Stanford University.

The ordinary Ph.D. degree gives good training toward research, but practically none at all toward teaching. For the benefit of students headed toward teaching positions, there is a program, available to any student who wishes it, with two important facets; one is a seminar, and the other is an opportunity for experience.

The seminars, first organized about twenty-five years ago, are open to everyone, but they are more particularly oriented for the students in Engineering or Science who are at least considering the possibility of becoming teachers. Started in the Department of Electrical Engineering in the 1940's, they have been extended throughout the School of Engineering, and the seminar members often come from other departments, including Chemistry, Physics, and Computer Science. The number of members of the seminar group is usually around twenty to thirty, and one unit of credit is offered for those who wish it.

The seminar meets once a week. Each meeting is led by a member of the Stanford faculty who is known for his good teaching, or perhaps by some other appropriate authority who might be from another university or from industry. This invited leader presents his topic in about an hour, and then there are questions and discussion, all quite informal, with the seminar members taking active part. The meeting may continue at the most for two hours, but usually is concluded after about an hour and a half.

In the Winter Quarter, the seminar concerns teaching: classroom teaching and its problems. We are not interested in the minor techniques of the teaching business, but rather in those basic questions that every teacher should face. What is the purpose of a teacher, what is his object? How is this object to be attained? What is the motive of the teacher? What is the motive of the student? How are his purposes to be attained? (A small book entitled *Do You Teach?* gives a narrative of this seminar. It is available at the bookstore.)

The seminar in the Spring Quarter is oriented toward the problems of the teacher other than classroom teaching. These include advising and individual work with students, research and publication, curriculum and organization, and administration and office management. This seminar is also open to all students, regardless of whether they have or have not attended the seminar more particularly devoted to teaching. The form of meeting is the same, and the seminar leaders are invited from among those faculty men and administrators who are in a position to give the seminar members what they will need to know.

Each seminar is concluded, at the end of the quarter, by a review in which the seminar members are expected to tell me, and to tell each other, what the various leaders have said during the quarter. It is expected that notes will be taken by the seminar members, and that these notes will be studied before the review at the end of the term. These review periods are always highly successful, and the results are surprisingly excellent. The reason is no doubt that the seminar members have a real interest in the subjects.

The other facet of the program provides an opportunity for graduate students to teach a class. A small group of students, usually undergraduate, is asked to volunteer to be taught by a graduate student. The undergraduate students come from some undergraduate class in which there are a large number of students, and it is usually not difficult to get about ten to volunteer for the small section to be taught by the graduate student. Every undergraduate student is entirely free to volunteer or not, and if he is not happy in the small section he may return to the main class at any time. It is a measure of the success of the system that practically no student has ever chosen to return to the regular class, taught by a regular faculty man.

The graduate student who teaches the class is free to do so in his own style, although of course he must cover the appropriate material. He uses the same textbook as the regular class, and he and the teacher of the main section collaborate in preparing and correcting examinations. He may assign the same homework from day to day, or not, as he and the teacher in the main section decide. It is important that results on examinations show no significant difference between the students in the main group and students in the small groups. Although the student teacher is inexperienced, he is available at every moment for questions and discussion.

The student teacher must of course know the subject very well. He learns the minor techniques of teaching very quickly, or if he does not his group of students point them out to him. It is found that a group of ten is about right for such a beginning class. With less, the atmosphere of meeting a class is lost; with more, the faults of inexperience are not so quickly rectified, and responsibility is greater. The novice teacher cannot go far wrong with a class of ten.

The graduate student teacher receives academic credit in the same amount as the students taking the course. This seems fair, as he learns a great deal of the subject matter in teaching the course. On the other hand, he receives no money. He is working for experience, not for pay, and thus does a better job. Care is taken to see that the use of such small classes does not affect the department budget, nor save any money. This is important in stressing that the operation is for the good of the student, and that it is operated for the student-teacher's benefit. (There have been minor exceptions to this policy.) It is shown that this is a practical procedure by the fact that there are far more graduate students wishing to teach courses than there are small classes available for them to teach. In fact, at the present time this whole program for teaching experience is in abeyance because of the impossibility of obtaining small classes to be taught.

Both the seminars and the teaching experience program have been in operation for over twenty years. They are both very successful, and are highly recommended.

March 28, 1972

APPENDIX VII-2

The Teaching Assistantship at Stanford: Summary of Recommendations*

MANAGEMENT PROBLEMS

A. *Simple Management Changes*

1. An officer of the University, preferably an officer in each of the Schools, should have clear responsibility for management of teaching assistantships (TA's).

2. Within the departments, a member of the faculty or a faculty committee with an identifiable chairman should be in charge of TA's.

3. The responsible officer in the department should make every effort to see that the teaching duties of TA's are related as closely as possible to their areas of interest.

4. Standard practices in the timing of TA appointments would be very helpful.

5. Statements of departmental TA compensation practices should be made available in writing to graduate students.

6. Written statements detailing duties should be made available to TA's.

B. *Inequities Within Departments*

1. TA policies within departments should be consistent with the total support situation.

2. The basis for the selection of TA's needs to be rationalized in some departments.

C. *Inequities Between Departments*

1. Although substantial differences in total support levels exist between departments, support levels in departments that are well off should not be restricted to conform to University-wide standards at a lower level.

2. The large inequities between some departments participating in the FYGA program should be rectified or justified.

3. The duties required for a given fractional appointment should be consistent across departments.

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* Excerpted from pp. 20–22 of the report of the Baldeschwieler committee.

5

4. The size of the TA budget for each department should be consistent with the actual number of TA working hours.

5. Funds from the TA budget should compensate TA's for their total contribution to teaching.

6. Tuition credit should be given in units rather than in cash.

COMPENSATION AND DUTIES

A. *Job Descriptions and Stipends*

1. A "Teaching Fellow" has full responsibility for a course and should receive a minimum stipend of $3,000, plus 9 units tuition per quarter for the nine-month academic year.

2. A "Teaching Assistant" (TA) is assigned teaching duties involving substantial direct contact with students, but is not in full charge of a course. For a half-time appointment he should receive a minimum stipend of $2,700, plus 9 units tuition per quarter for the nine-month academic year.

3. A "Course Assistant" assists a faculty member by preparing and correcting examinations and problem sets, holding office hours, and conducting problem or review sections. The minimum stipend for a course assistant for a half-time appointment should be $2,400, plus 9 units tuition per quarter for the nine-month academic year.

B. *Additional Conditions for Appointments*

1. The term of a graduate Teaching Fellow or Teaching Assistant should not exceed six quarters.

2. An annual review should be made of stipend levels.

3. A fellowship should be established for payment for tuition deficiencies for those graduate students who incur such a deficiency as a consequence of their service to the University.

4. Departments having 5-unit courses should have a 4- or 5-unit option to permit TA's to enroll in two courses and keep within the 9-unit tuition grant.

5. The University should dignify the position of a Teaching Fellow.

GENERAL RECOMMENDATIONS

A. *Attitude of the University*

In the determination of stipends, TA's should be considered primarily as students seeking an education.

B. *Organization and Administration of Teaching Assistantships*

1. The appointment and administration of teaching assistantships should continue to be department functions, but departments should be encouraged to make new and more fruitful uses of TA's.

2. There should be one person in each department to whom all TA questions can be referred.

3. The initiation of departmental TA-training programs should be encouraged.

4. TA's should be involved in departmental committee work associated with the distribution of duties and content of TA-training programs.

5. A committee should be established to which TA's can address any grievances that cannot be handled at the departmental level.

C. *FYGA Support Exhaustion*

It is crucial that planning be initiated for replacement of present FYGA funding.

April 15, 1969

APPENDIX VII–3

The Department of Mathematics Teacher Training Program

Report from Karel de Leeuw and Chris Nevison to the University Fellows

We have come to one main conclusion as a consequence of our experience with the Department of Mathematics Teacher Training Program.

Our conclusion is precisely parallel to the following observation about faculty teaching made by J. Gaff and R. Wilson in their article, "The Teaching Environment: A Study of the Optimum Working Conditions for Effective College Teaching":*

"Perhaps the most important policy affecting the motivations of faculty members is the reward structure of their institution. If faculty members are to give undergraduate teaching a high priority in their scale of values, if they are to devote a considerable portion of their time to teaching and students, and if they are to derive satisfactions which sustain them, there must be a *visible structure of rewards* for such efforts.

"The reward structure in its broadest sense includes both the distribution of extrinsic rewards and provisions for faculty to derive intrinsic satisfactions from their work. Extrinsic rewards are typically the granting of salary increases, promotions, and tenure. Intrinsic rewards include a sense of commitment to shared goals of recognized high purpose, feelings of personal and professional growth, and concomitant feelings of accomplishment, satisfaction, and self-esteem. College policies can generate both intrinsic and extrinsic rewards for teachers and motivate them toward the improvement of teaching."

Our main conclusion is that a Teaching Assistant is not likely to be motivated to put much effort into his own teaching if he views his assistantship as merely a reward for successful academic work, and if he sees the research orientation of his department as precluding any serious concern with teaching—especially with the teaching of the elementary courses to which he is engaged.

If, on the other hand, he sees his department as being deeply concerned with teaching, and especially if faculty members whom he respects as mathematicians *and* teachers share in the teaching of the elementary courses, then it is quite likely that he will view his teaching assignment as a challenging and rewarding one and a significant part of his own education.

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* *AAUP Bulletin*, 57 (December 1971), 475–93.

For this reason, we are preparing a set of recommendations to the Department of Mathematics, which, if implemented, would greatly change the image of the department with respect to the teaching function. We feel that unless this image is changed, most graduate students will not devote much time or energy to their teaching, and thus will derive little benefit from any teacher-training program. A preliminary version of the recommendations is attached as Annex A. We feel that these proposals are the most significant consequence of our involvement in the teacher-training program.

The teacher-training program itself took place during Winter and Spring quarters of 1970–71. During the Winter Quarter, 30 graduate students participated. The students were divided into four work groups. Three of these groups consisted of graduate students who were teaching during the Winter Quarter, and these group activities were mainly concerned with the courses the students were teaching and discussions of the visitations they did of one another's classes.

The fourth group, which consisted of five students who were not teaching, worked with several students who had had difficulty with the material presented in our algebra and trigonometry course, and examined several programmed texts with an eye toward their suitability for this course. The work groups were led by four graduate students having substantial teaching experience, Tom Beale, Barbara Fink, David Hoffman, and Tim Jackins. In addition to weekly meetings of the work groups, participants in the program attended panel discussions, lectures, and films covering various aspects of teaching. Each student who was teaching had his class videotaped twice during the quarter for a brief period of ten minutes. These videotapes were viewed by the work groups, and Professor Arthur Hastings held a session in which he analyzed aspects of the tapes. At the end of the quarter, each participant was asked to submit a report evaluating his experience.

In response to suggestions made in these reports, we proceeded somewhat differently during the Spring Quarter. Students observed that the work groups would have been more useful if they had concerned themselves more with the subject matter being taught, rather than with general questions of teaching. For this reason, we divided the students this time into two work groups, one for the instructors of Math 11 and the other for the instructors of Math 21. The first was led by Professor deLeeuw and the second by Kathy Owen, an experienced Teaching Assistant. Class visitation and videotaping were continued. Participants were asked to submit monthly reports and a final report.

As a consequence of our experience with the program for two quarters we have come to believe that the activities we included in the program should be divided into two components. The first should take place in the quarter preceding that in which a student teaches for the first time, and the second in the quarter in which he teaches. Details of this division are indicated in the recommendations attached in Annex A.

An additional consequence of our teacher-training program was the realization that the calculus series taught by most of our teaching assistants (Math 10, 11, 21, 22, 23) was inappropriate for the great majority of the students taking it. At one time, this series was taken largely by Engineering students, but because of the shift of undergraduate interest away from Engineering, it has come to be taken mainly by students in the Biological or Social Sciences. For such students, a more appropriate sequence (Math 30, 31, 32) has been designed and taught by Professor MacGregor for the past few years. Starting next year, most teaching assistants in the Mathematics Department will teach sections of Math 5, 6, and 7 (essentially the same course as Math 30, 31, 32) and we will offer only a few sections of the Math 10, 11, 21, 22, 23 series.

Finally, we wish to thank Jim Fadiman of the Counseling and Testing Center and Arthur Hastings, formerly of the Speech and Drama Department, for very significant help and encouragement. We feel that Arthur Hastings is an extremely valuable resource for a school which is trying to help its faculty and students become better teachers, and hope that Stanford will sometime in the future find a place for him.

ANNEX A

The following recommendations are the result of the year-long experiment with the teaching workshop and related activities in the Mathematics Department. We feel that the implementation of these recommendations would significantly raise the quality of teaching in the Mathematics Department and would also offer graduate students opportunities which heretofore have been only available on an experimental basis. The experimental program which led to these recommendations was supported by the University Fellows Innovation Fund as well as a great deal of time put in by individuals both inside and outside the Mathematics Department.

I. We recommend that course coordinators for the courses usually taught by graduate students maintain close liaison with the graduate students teaching these courses. They would teach at least one course in the series for which they were the coordinator during the year they were coordinating. They would hold regular workshop meetings with the graduate students teaching these courses to discuss problems encountered in the day-to-day teaching, as well as more general problems of teaching. These sessions should be regarded not just as part of the administrative function, but as an opportunity for all concerned to develop their teaching skill. Since course coordination should involve a substantial commitment of time, the coordinators should be released from some of their other teaching duties in order to carry out these activities.

II. Teaching Assistants would attend regular workgroup meetings with the instructors of other sections and related courses. These would focus on the problems of the specific courses but would also be an opportunity to discuss broader problems of teaching. They would be considered part of the teacher's commitment to his job.

III. The teacher-training program would continue with some modification. The continuing development of the details of this program would be the responsibility of the committee on teaching (see item VII). It would be required of all new teachers the term before they first teach. A participant would take part in the workgroup meetings of the course he was to teach (or the preceding course in the sequence). He would undertake a program of class visitations. He would give two lectures, which he would then discuss with the course coordinator. These would be tape-recorded or videotaped, if the equipment is available. He would be expected to do some reading relevant to the development of teaching skill under the direction of the course coordinator. He would be expected to submit a report on his various activities at the end of the term. This would still be titled Math 355 for three credits.

IV. Until recently a graduate student in Mathematics who was accepted and given financial aid was almost automatically guaranteed at least three years at Stanford, time enough to attempt the qualifying examination twice if necessary and time enough to develop his interest in mathematics without the pressure of competition. Owing to the recent financial squeeze, the Department has been forced to carefully reconsider each student's application for financial aid on a year-to-year basis. Consequently, we feel that the Mathematics Department now loses some very competent students who have broader commitments than the present criteria for financial aid measure. To return some of the balance that prevailed when finances were better, we recommend that graduate students be eligible for financial aid on the basis of their proven teaching skill when their research and mathematical skills are adequate. (We note that in the School of Engineering, Teaching Assistantships are not viewed as rewards for academic excellence. In the Department of Electrical Engineering, appointments to Research Assistantships and Teaching Assistantships are made by separate committees.) The committee on teaching, described in item VII below, would have the responsibility of recommending up to four graduate students for financial aid on the basis of their teaching performance. These recommendations would have to be approved by the committee on financial aid, but if these two committees disagreed, even after discussing the case together, the final decision would lie with the Chairman of the Department.

V. We recommend that the Mathematics Department establish a special faculty position for mathematicians noted for their outstanding teaching to be hired as visiting professors. We note that the Department will be losing a valuable teacher when Professor Bacon retires, and believe that this loss, unless compensated, would result in a significant shift in the research-teaching balance of the Department. The committee on teaching (see item VII below) would be the selection committee for this position. They would be directed to search for skilled teachers of mathematics to be hired for one or two years at a time. This would be an original contribution to mathematics education which would provide the Department with a continuing flow of ideas on teaching. The visiting professor would be given the opportunity to enrich his commitment to teaching with a stay at a noted institution such as Stanford.

VI. We recommend that the Department consider teaching skill an important criterion in the hiring of all faculty, especially junior faculty. We note that the junior faculty hired in recent years have a good record as teachers and recommend that the Department continue this in the future with a firm policy commitment.

VII. We recommend that the Department appoint a committee on teaching, as already recommended by the Graduate Study Committee. The composition and duties of the committee would be as outlined below. These points reiterate and expand upon the original recommendation of the Graduate Study Committee.

a. The committee would be composed of equal numbers of faculty and graduate students, to be appointed by the Chairman. It is recommended that the faculty members on this committee include course coordinators for the various calculus courses.

b. The committee would be responsible for surveying the effectiveness of all aspects of the teaching function of the Department. They would report appropriate recommendations to the Graduate Study Committee and the Undergraduate Committee.

c. The committee would recommend up to four graduate students for financial aid on the basis of their teaching skill each year. These recommendations would be subject to the review of the committee on financial aid, as noted above in item IV.

d. The committee would serve as a selection committee for the faculty position described in item V above.

e. The committee would oversee the undergraduate seminar program, the teacher-training program, and other innovative teaching programs.

f. The committee would supervise the establishment of a file of reports on all courses taught in the department as described in item VIII below.

VIII. Course File. We recommend that the Department establish a file of reports on all courses taught in the Department. All teachers would be asked to submit reports on the courses they teach including such items as text used, its success, material covered, possible alternative approaches to the material, etc. We feel that such a file could be a great aid to anyone teaching similar courses in the future and would provide graduate students with a rich source of material on teaching methods.

IX. We recommend that the Department attempt to obtain videotape equipment for use with the teacher-training program. We used equipment loaned to us by the Physics Department during the past Winter and Spring and found it to be a very valuable aid in the development of teaching skill.

ANNEX B

Finances and Time

The Teacher Training Program was financed by a grant of $1,500 from the University Fellows Innovation Fund. In addition to this grant of money, a number of people put in the time necessary to make this program work.

We are grateful to the Physics Department for the loan of their videotape equipment on four occasions. This loan enabled us to do more taping with greater flexibility than would otherwise have been possible. George Rothbart assisted with the operation of this equipment.

We are grateful to James Fadiman of Counseling and Testing, and Professor Arthur Hastings, formerly of Speech and Drama, for their advice and assistance.

The Teacher Training Program was administered by Karel deLeeuw of the Mathematics Department, with the assistance of Richard Lacey and Chris Nevison of the same department.

Expenditures

$1,000.00	$500.00 each to Richard Lacey and Chris Nevison for administration of the program
105.00	To George Rothbart for videotape operation
154.10	Salary and wage benefits
135.45	Three videotapes
20.00	One microphone
$1,414.55	Total expenditures to date
85.45	Balance
79.80	Outstanding debts (to George Rothbart)
5.65	Net surplus

October 14, 1971

APPENDIX VIII-1

Financial Support of Graduate Students at Stanford

TABLE 1

Stanford Graduate Students Receiving Support from Federal Government Funds, 1964–72

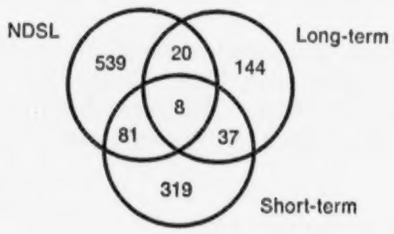
Name of grant	1964–65	1965–66	1966–67	1967–68	1968–69	1969–70	1970–71	1971–72
Atomic Energy Commission:								
Fellows	12	12	9	8	15	15	13	6
Trainees	—	—	—	—	—	4	4	4
Federal Water Pollution:								
Fellows	—	—	—	—	4	2	2	3
Trainees	—	—	8	18	14	21	34	27
Housing and Urban Development:	—	—	—	—	1	1	0	0
National Aeronautics and Space Administration:								
Trainees	25	39	46	44	39	39	46	30
International Fellows	6	4	6	5	8	6	10	12
National Defense Education Act	52	82	161	216	225	169	117	111
National Defense Foreign Language	26	36	37	48	49	44	41	29
National Institutes of Health:								
Children's Bureau	5	5	4	5	3	5	0	0
Fellows	80	81	80	93	89	74	57	28
Trainees	129	143	160	153	205	253	293	244
National Science Foundation:								
Cooperative	47	45	12	0	0	0	0	0
Fellows	144	149	201	217	214	220	246	191
Science Faculty	20	7	11	4	5	4	4	0
Science and Mathematics	52	50	0	0	0	0	0	0
Summer Teaching Assistants	15	21	13	13	11	9	4	0
Trainees	48	93	121	134	143	132	128	86
Office of Education:								
Educational Research Trainees	—	—	20	20	21	28	26	16
Experienced Teachers	—	—	26	25	26	0	0	0
Fulbright-Hays	—	3	2	6	3	4	3	7
Prospective Teachers	—	—	16	30	35	35	12	0
Guidance Fellowships	—	—	—	—	—	7	7	0
School Administration Fellowships	—	—	—	—	—	10	12	0
Speech and Hearing Trainees	5	4	4	0	0	0	0	0
Vocational Rehabilitation Administration	41	51	45	33	11	14	0	0
TOTAL	707	825	982	1,072	1,121	1,096	1,059	794

TABLE 2
Loans to Stanford Undergraduate and Graduate Students, 1970–71

Type of loan and borrower	Amount borrowed	No. of loans	No. of students
National Defense:			
Undergraduate	$ 430,934	788	699
Graduate	1,079,463	742	648
TOTAL	$1,510,397	1,530	1,347
University long-term:			
Undergraduate	$ 173,477	347	294
Graduate	206,577	238	209
TOTAL	$ 380,054	585	503
University short-term:			
Undergraduate	$ 92,636	383	308
Graduate	163,694	551	445
TOTAL	$ 256,330	934	753
ALL LOANS:			
Undergraduate	$ 697,047	1,518	1,104
Graduate	1,449,734	1,531	1,148
GRAND TOTAL	$2,146,781	3,049	2,252

SOURCE: Financial Aids Office 1970–71 Loan Report.

NOTE: Totals in the last column do not add up to grand totals because many students had more than one kind of loan. The overlapping loan patterns for graduate students are shown in the following diagram:



APPENDIX VIII-2

Work-Study Programs for Graduate Students

A variation of the principle of admitting students with the option of delaying enrollment to permit work is the work-study strategy, now known at Stanford as cooperative educational programs. The University at present sponsors two such programs: The Honors Cooperative program, and the program of internships offered through Engineering-Economic Systems.

The Honors Cooperative program serves students in Engineering, Physics, Applied Physics, Mathematics, Statistics, and Computer Science. Students admitted through this program number from 400 to 500 in a given year, and must meet all the normal admission requirements for graduate students in Engineering. Students can earn Master's degrees by working part-time in the program for approximately two years; students in the program working toward the Engineer or Ph.D. degree must spend at least one full academic year in full-time residence while completing their dissertations.

The Engineering-Economic Systems program enables students to work for one year in occupations that, theoretically, provide them with some materials for a dissertation. Most of the jobs administered through the program are funded by either the U.S. government or Stanford Research Institute.

POSSIBILITIES FOR A PROGRAM OF COOPERATIVE EDUCATION FOR GRADUATE STUDENTS

Any structuring of a formal program of cooperative education for graduate students at Stanford would have to take into account the differences between the various departments and the differing career aims of students. Such departments as Engineering or Economics may have less difficulty placing students in non-academic occupations than departments like English or Philosophy. The tendencies in career aims of students in different departments appear to vary according to the pre- or post-Ph.D. job market possibilities. Increasing numbers of students in departments such as Economics are looking toward non-academic careers, while Philosophy and

English students, for example, almost universally look toward academic careers.

With so many people holding doctorates in this country, academic job opportunities for those without the doctorate are declining considerably. Therefore, a cooperative education program would probably be more useful to those departments whose students are employable in non-academic professions.

Possible Aims for Program

Programs of cooperative education may be geared to provide students with opportunities: to work in jobs that may give them materials for their dissertation; to give them experiences that may have a direct relationship to future professional roles; to give them experience in a job they do not envision as a career, and thus a perspective on their career choice; or to allow them an opportunity to finance in whole or in part the continuation of their graduate study.

Job Opportunities for Graduate Students

Some job opportunities exist for students trained for applied research or administration (with government agencies, private firms, etc.), but students whose training is restricted to academic research or teaching will find their opportunities more limited. Although the latter students may find their skills applicable in other areas—for instance, in editing—opportunities in these areas are few. In addition, the costs of locating such jobs may be prohibitive, thus precluding work-study programs from depending on them to any substantial degree.

ADVANTAGES AND DISADVANTAGES OF A COOPERATIVE PROGRAM

The advantages of a cooperative education program will vary with the type of employment available to the individual student. A job in a field outside a student's discipline may provide him with a useful perspective to bring back to his graduate study, but may also make it difficult for him to remain current in his discipline, to maintain his status in his department, and to remain in contact with his advisers.

A student able to find employment in a field related to his discipline may avail himself of that opportunity to engage in dissertation research or writing; he may also, if he is in the early stages of his graduate career, acquire an interest in practical applications of his discipline. On the one hand, this may enable him to make a more informed choice of later courses or a dissertation topic; on the other hand, the effect in some programs might be to make a student impatient with the theoretical courses that are necessary to a broader understanding of the discipline.

APPENDIX IX-1

Summary of Non-Doctoral Graduate Programs Available at Stanford*

This summary is based primarily on the information in *Courses and Degrees 1970–71* (hereafter CD), supplemented by personal inquiries here and there. It cannot, therefore, be relied on absolutely in detail as a statement of the current practice of each department and program (the phrasing of CD sometimes reminds one of the Delphic Oracle on its less inspired days, and may well bear about the same relation to the hard facts). Nonetheless, we believe that the general picture obtained is accurate enough for the purposes of this committee's work.

1. *Master's Degree in the Field Concerned*

A. Offered as a separate degree, without any statement of special conditions:

Business: (2-year Master's in Business Administration)

Earth Sciences: Geology, Mineral Engineering, Petroleum Engineering

Engineering: Engineering in Biology and Medicine, Aeronautics and Astronautics, Applied Mechanics, Chemical Engineering, Civil Engineering, Civil Engineering Division of Architecture, Electrical Engineering, Engineering-Economic Systems, Industrial Engineering, Materials Science, Mechanical Engineering, Operations Research.

Education: (A.M. in Education; for MAT, see Section 3)

Humanities and Sciences: Applied Physics, Art and Architecture (in Studio Art *only*), Asian Languages, Chemistry, Communication, Computer Science, Drama (the MFA; see Section 6), East Asian Studies, French and Italian, German Studies, Linguistics, Music, Physical Sciences General Program, Spanish and Portuguese, Statistics

Law: (only the J.M., a non-professional, terminal degree)

Food Research

B. Offered as a separate degree, but only under special conditions:

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* Does not include School of Medicine.

Classics ("under very exceptional circumstances"); Economics (only for "students matriculated to graduate standing in other departments of the University"); English (only for the Junior College Credential *or* for the A.M. in Creative Writing); otherwise as C); Philosophy (CD 355 states that they "will not ordinarily" accept candidates for the A.M.); Political Science ("in unusual circumstances").

C. Offered as a stepping-stone in the student's progress toward a doctorate (in practice this usually seems to mean that the Master's degree may be granted as a consolation prize to candidates who are advised not to proceed further, but naturally few departments print this in so many words):

Anthropology, Art and Architecture (*except* for Studio Art; cf. Section A), Classics (cf. Section B), Economics (cf. Section B), English (cf. Section B), French and Italian, History,[*] Mathematics, Modern Thought and Literature, Physics, Psychology, Slavic (this seems to be their practice, though it is not expressly stated in CD), and Sociology.

D. Definitely not offered:

Biological Sciences; Comparative Literature.[†]

2. *Interdisciplinary Master's Programs*

Engineering: M.S. in Engineering Science (CD 81); Engineering in Biology and Medicine, offers dual-degree program of M.D. and M.S. in Engineering; Electrical Engineering, special M.S. program in Computer Science (with Computer Science); special M.S. and Engineer programs in Electrical Engineering Administration (with Business); Medical Electronics Program (with Biology and Medicine) for M.S. and also for M.D.

Education: M.E.A., or Master of Educational Administration, jointly with Business, CD 49; see also Section 3.

African Studies: gives no degree in African Studies as such, but offers interdisciplinary degrees through Anthropology, Education, Food Research, History, Law, Linguistics, Political Science, Sociology.

Latin American Studies (CD 321).

Physical Sciences: General Program.

Law: joint programs for doctoral students to take A.M. in Business, Economics, Political Science.

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[*] Except for co-terminal program (see Appendix IX-2).

[†] The above information, as we stated, was gathered from the various departments' programs in CD. *The Stanford University Bulletin* for 1971, pp. 22–23 lists twenty departments (not counting those in Medicine) that "will consider only applicants who intend to proceed to the Ph.D. degree;" of these, however, three (Asian Languages, French, German) will relent to the extent of accepting A.M. candidates "providing they do not request financial aid from Stanford." It does not seem possible to reconcile this information with that found in CD.

Hydrology (CD 455).
Plasma Research (CD 471).

3. *Master of Arts in Teaching (M.A.T)*

Offered by the following departments in conjunction with Education:

Art and Architecture, Biological Sciences, Chemistry, Classics, Drama, English, French and Italian, German Studies, History, Linguistics, Mathematics, Physical Sciences (General Program), Physics, Political Science, Slavic, Sociology, Spanish and Portuguese.

4. *Engineer's Degree*

(See CD 8; briefly, this degree requires six quarters, of which three must be in residence, and a thesis):

Mineral Engineering, Engineering, Aeronautics and Astronautics, Applied Mechanics, Civil Engineering (two of the programs here are interdisciplinary with other departments), Electrical Engineering, Engineering-Economic Systems, Industrial Engineering, Materials Science, Mechanical Engineering.

5. *Secondary and/or Junior College Credentials*

Offered by the following departments in conjunction with Education:

Art, Biological Sciences, Chemistry, Drama, English, French and Italian, History (under title Social Studies), Physics, Political Science, Spanish and Portuguese, Physical Education.

6. *Other Non-Doctoral Graduate Programs and Unusual Variants*

Business: Non-degree *or* degree program in the International Center for the Advancement of Management Education, the Escuela de Administración de Negocios para Graduados, and the Institut Européen d'Administration des Affaires; and the following non-degree programs: Stanford-Sloan Program, Stanford Executive Program, Financial Management Seminar, Financial Aspects of Utility Regulation Seminar, Logistics Management Program.

Earth Sciences: Special program in Mechanical Processes and Earth Materials (CD 15); Geology, program for co-terminal B.S. and M.S. degree (CD 20); Mineral Engineering, in which an M.S. degree "may emphasize either management or research," according to the student's need (CD 33); Petroleum Engineering, similarly offers both "Engineer in Petroleum Engineering" *and* "Engineer in Petroleum Engineering (Management Option)."

Engineering: Co-terminal B.S. and M.S. programs (CD 78); Dual-degree programs with liberal arts colleges (comprising three years of study at one of eleven liberal arts colleges, followed by two years of Engineering at Stanford; the co-terminal B.S. and M.S. scheme is also available on this program; CD 78); four-two program (M.S. designed for students with bachelor's degrees in Physical Science, but lacking background in Engineering; CD 80–81); International Program in Engineering Studies (two-year interdisciplinary program leading to both M.S. and Engineer degrees; especially for students of developing nations); Honors Cooperative Program (allows industrial students to come and do graduate work on a part-time basis in any of the Engineering programs, for M.S., Engineer, and Ph.D.).

Education: It is worth noting (perhaps as a warning) that this School formerly offered an Educational Specialist Degree, which was above the A.M. and below the Ph.D., but has found reason to discontinue it.

Humanities and Sciences: In Art, Graduate-Students-at-Large are "permitted but not encouraged." In Asian Languages and East Asian Studies, the Master's programs are remarkable in that they normally take two years and do *not* require any previous background in the fields concerned. In Biological Sciences, the Hopkins Marine Station offers facilities for work on an advanced undergraduate or graduate basis (CD 219). In Drama, the M.F.A. (Master of Fine Arts) is offered in acting, costume, lighting, stage design, and technical production. This program is longer than most A.M.'s and falls slightly below the Ph.D. in scope, being a training program for the professional theater; although Ph.D.'s are given, the real emphasis is on the M.F.A. (CD 414). In English, noteworthy are (a) the Stanford Junior College Credential, involving an A.M. in English plus some work in Education (CD 272), and (b) the A.M. in Creative Writing (CD 273). German Studies is unusual in providing its own "certificate of teaching proficiency in German" to all its Ph.D. candidates (CD 294). In Physical Sciences (General Program), the A.M. program is designed to give a general view of the main fields of physical science, with an eye especially on students who may become secondary school teachers (CD 365).

The Inter-University Center for Japanese Studies in Tokyo, and Inter-University Center for Chinese Language Studies in Taipei both conduct programs open to graduate as well as undergraduate students (CD 456–57).

APPENDIX IX-2

Co-Terminal A.B. and A.M. Program in History

Admission

Applications should be submitted during the Spring Quarter of the student's Junior Year and must be submitted no later than November 1 of his Senior Year. Applicants should be screened by a committee of three members of the History Department Faculty, including the Director of Graduate Study.

Requirements

The student must meet all requirements for both degrees. He must complete 15 full-time quarters (or equivalents) or three full quarters after completing 180 units. During his Senior Year he may, with the consent of the instructors, register for as many as two graduate courses. During his final year of study he must complete at least three courses that fall within a single Ph.D. field.

APPENDIX IX-3

Black Faculty Fellows Program

Memorandum from Lincoln E. Moses and Thom Rhue to University Progress Fund

For a number of years I (and more recently Tom Rhue) have been seeking a way to bring some numbers of black faculty to Stanford for one-year visits in the hope that, in that manner, Stanford can make an important contribution to black education and build ties with an important part of the higher education enterprise which it needs to know better.

My first proposal was turned down by Education Professions Development Agency (doubtless because no black had ever had a hand in it—it was that early). Thom has since submitted once or twice to EPDA and now has a well-thought-through scheme seeking funding for 1973–74. I enclose a copy [Enclosure 2] of his preliminary proposal describing it. He is working with Henry Organ on getting it prepared for outside attack.

A brief synopsis of the key idea is this. Enable a full-time faculty member from a black college to come to Stanford for a year, studying in his field, updating or refreshing his professional "stock." Since many faculty members in a typical black college have only a Bachelor's or Master's degree, there may be some who would complete a Master's degree in their field—this would require admission to a department. Or, again with departmental consent (but approximately as a non-matriculated student), it might be possible to complete work which would count toward the Master's or Doctor's degree in another institution. The college from which the visitor came would pay two-thirds of his usual salary into the program; Stanford would send in exchange a Teaching Fellow (who might or might not be black). Thus the absent teacher's course load (or most of it) would be taken care of, and some financial leeway would remain for the college to resolve any complication caused by the exchange. There would be other benefits such as: improving the web of connections between this essentially white institution and those sources of graduate student recruits; promoting undergraduate transfers (maybe); and placement opportunities for some of our own Ph.D.'s in the future.

The purpose of *this* proposal is to obtain from the Provost's Innovation Fund the sum of $33,200 (one shot) for the purpose of starting the program off in 1972–73 with four exchanges.

The value of getting started soon is to get realistic appraisal of the value and possible bugs in the undertaking, and to be tooled up for the larger-scale undertaking supported by outside money, both on our part and by way of establishing and exploring contacts in the community of black colleges.

Thom has already had clear favorable reaction from the President of Tuskegee, so that one or two persons from there is a likelihood. Lou Padulo believes that out of the Morehouse/Spellman complex it is realistic to expect he can get another one or two such exchanges, even on this short notice. Other possibilities could be developed, probably.

The budget request for the outside full scale operation will include some direct costs for office, travel, supplies, administrative time, and so forth which have not been put in this budget. We would welcome the opportunity now to get this thing started, and will actually be able to devote the necessary energy during Spring Quarter and meet the costs incident to it.

March 3, 1972

ENCLOSURE 1: BUDGET

Participants			
4 Visitors			
4 × $2850	Tuition	$11,400	
4 × $6000	Stipend	24,000	
4 × $1000	Dependents @ $500 each	4,000	
4 × $ 500	Travel	2,000	
		$41,400	
Less institutional contributions of ⅔ Salary estimated as 4 × $6000		24,000	
			$17,400
4 Stanford T/F's			
4 × $3150	Stipend	12,600	
4 × $ 300	Travel	1,200	
4 × $ 500	Dependents	2,000	
			15,800
			$33,200

ENCLOSURE 2: BLACK COLLEGE–STANFORD PROGRAM

***Memorandum** by Thom Rhue*

Black colleges have always been understaffed and the faculties have always been underdeveloped, having only a few Ph.D.'s and a great many B.A.'s on the teaching faculty. In light of the move of white colleges with more money to attract better black students and faculty with financial aid and higher salaries, black colleges have experienced difficulty in competing for new faculty.

As part of Stanford's attempt to upgrade the quality of education available to minority students, it is proposed that the University begin a program to assist in upgrading the quality of teaching in predominantly black colleges in the South. A recent survey (Rhue, 1971) of teaching faculty in predominantly black colleges indicates the following degree distribution: B.A. 9 per cent, M.A. 61.5 per cent, Ph.D. 29.5 per cent.

The proposal focuses on two problems. First, while 8 per cent of the Bachelor's figure represents physical education instructors, 92 per cent ($N = 657$) teach a wide range of academic subjects. Second, while there is a preponderance of faculty holding Master's degrees, many are working on the doctorate but are prevented by heavy teaching loads from completing them in a reasonable length of time.

The Assistance in Teaching program is directed to these two problems. We propose that faculty who have a commitment to teaching in the black colleges, but who hold only the Bachelor's degree, be admitted to University departments willing to participate for a Master's degree, with the understanding that they will return to the college to teach. Master's degrees in Humanities and Sciences, Education, and some branches of Engineering generally take no longer than one year to complete.

Second, many of the faculty who hold Master's degrees can be characterized as having completed all the requirements for the doctorate except the dissertation. Since the overwhelming teaching demands at undergraduate black colleges prevent their finishing the degrees, the program for this group of people would be seen as a sabbatical, which would give the teacher released time for as much as a year to work at Stanford, both to complete his dissertation and to be relieved of teaching duties so that he might pursue research interests.

A factor in accrediting colleges is the proportion of Ph.D.'s in the faculty. Such a program could help secure the accreditation status of colleges with few Ph.D.'s on the faculty.

For the Bachelor's or Master's degree holder who visits the University, an exchange can be established with graduate students in his particular field, who will replace the visitor at his home school to teach the courses that would otherwise not be taught. This gives the Stanford graduate student an opportunity for teaching experience, which is an increasing demand among graduate students, and a replacement for the black college, which has difficulty hiring personnel for a single academic year.

Every attempt will be made to secure outside funding for such a program, and there is evidence that the increased interests of foundations and HEW in black colleges will positively affect funding chances. Present thinking foresees virtually no cost to the University.

Because the program is planned totally with outside financial support, and because the faculty member participants are committed to returning to their respective colleges, we propose enrolling applicants without the normal admissions procedure in Stanford departments willing to participate. A separate application and review procedure—with faculty from the participating department, a coordinator from the Graduate Division, and relevant personnel from the home college—could be established to carry out necessary administrative tasks.

APPENDIX IX-4

The University of Chicago's Divisional Master's Program in the Social Sciences

Higher education in America is undergoing a time of testing and reappraisal as profound as any in several generations. There is a growing uncertainty over educational objectives, and a lack of self-sufficiency felt in any given academic discipline. The university now must seek greater relevance and perhaps new academic priorities. Our best students tend to question the pursuit of long, highly specialized programs of graduate training when new academic positions to use such training are diminishing in number, and when there is an increasing need for diversity in the acquisition and use of knowledge. As the purposes and substantive content of academic programs change, we have asked ourselves what can be done to provide wider opportunities for entry into graduate programs and to reduce their duration.

Many of the pressures for a heightened contribution to issues of public policy and for increased flexibility in programs of graduate training focus within the social sciences. The intensified student interest in problem-oriented, interdisciplinary study has led the University of Chicago's Division of the Social Sciences to offer a broad, flexible graduate program contributing a new dimension to graduate study. Students concerned with issues of public policy, urban studies, population problems, communication and mass media, and cross-cultural problems may study these areas within a variety of disciplinary perspectives. Our program is planned to provide a bridge between undergraduate curricula in the liberal arts and the multiple roles of public citizens in business, government and the professions.

General Description of the Program

The Division of the Social Sciences has long maintained a program emphasizing an interdisciplinary approach to the analysis and comparative study of contemporary and historical societies called the Divisional Master's Program. It now offers interdisciplinary sequences in Urban Studies, Individual and Society, Cross-Cultural Problems and Communication. Within the Program's requirements, the student himself with his advisor/preceptor is encouraged to design a meaningful program of study that will suit his own individual interests.

In the past, graduates of the Divisional Master's Program have entered such fields as teaching, administration, and business; some have gone on for further graduate studies; and others have staffed governmental and private agencies, joined research and development teams, planned political campaigns, and have held positions in a number of other service organizations.

Curriculum and Requirements

The requirements here summarized are a general statement of the requirements applying to all students. Each individual sequence of study is described separately. Notice that these requirements supersede those listed in the University of Chicago *Graduate Announcements*, 1971–1973.

I. Successful completion of at least 9 courses at the 200 level or higher with the required grade average (3.0).

II. Completion of an M.A. paper.

III. Completion of the year-length preceptorial seminar for which one course credit is given. This seminar is centered around the particular interests or problems of the students in each sequence. The seminar is designed as an exchange of ideas related to student interests in preparation for the writing of the M.A. paper; often guest speakers will lead the discussion.

IV. One course in statistics for students without prior statistical training. (Students are urged to review college algebra in preparation for their statistical requirement).

In addition, all students at the time of their entry will have their whole program reviewed and approved by their advisor/preceptor.

Sequences Offered

I. *Urban Studies*
  - A. 3 courses in any one of the following departments—Anthropology, Economics, Education, Geography, History, Human Development, Geography, History, Committee on Human Development, Political Science, Psychology, Sociology
  - B. 4 courses of guided electives selected from the Center for Urban Studies and from urban-related courses from other departments
  - C. 1 course preceptorial seminar
  - D. 1 course statistics

II. *The Individual and Society*
  - A. 3 courses: 1 from each of the following groups: 1) Personality and Psychopathology; 2) Development and Education; 3) Social and Community Psychology
  - B. 4 courses guided electives
  - C. 1 course preceptorial seminar
  - D. 1 course statistics

III. *Cross-Cultural Problems*
  - A. 3 courses: one from each of the following groups: 1) Anthropology

and Sociology; 2) Economics and Geography; 3) Political Science and Area Studies[*]

B. 4 courses guided electives
C. 1 course preceptorial seminar
D. 1 course statistics

IV. *Communication*

A. 3 courses in communication
B. 4 courses guided electives
C. 1 course preceptorial seminar
D. 1 course statistics

This sequence requires a comprehensive examination as well as an M.A. paper.[†]

Requirements for Admission

Applicants for the Divisional Master's Program must meet the standard admissions requirements of the University of Chicago: an A.B. degree or its equivalent and a strong academic record. Graduate Record Examination scores are recommended but not required. In exceptional cases part-time students may be accepted.

Where the candidate is a mature student beyond normal college age with unusual ability and experience, the A.B. degree requirement can be waived. Such a student may initially be admitted as a Student-at-Large, would take courses in areas where he is deficient, and if successful, would then be admitted to the Divisional M.A. program. The number of additional courses required of such a student will be determined by the Dean of Students of the Division and the Committee Chairman, but will not exceed 18 courses (six quarters of study) beyond the 9 courses required for M.A. Normally, courses completed as a Student-at-Large will not be counted toward the M.A. requirements.

Scholarship Aid

A limited number of tuition scholarships and a very few fellowships are available for this program. They are highly competitive and granted on the basis of academic promise and need.

Admission Procedure

Write to the Dean of Students, Division of the Social Sciences, 1130 E. 59th St., Chicago, Ill. 60637, to obtain an application for admission and aid and a copy of the *Graduate Announcements*. When applying and when filling out forms, specify as the department of graduate study the Divisional Master's Program, Division of the Social Sciences.

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[*] Consult the *Graduate Announcements* for a list of courses under non-western area study committees (African Studies, Middle Eastern Studies, Southern Asian Studies and Slavic Studies).

[†] Students interested in Communication relating to family planning will be required to take a summer workshop in family planning.

APPENDIX IX-5

Open Fellows Program

Memorandum from C. John Herington to Committee on Alternative Programs

Background

The Committee's inquiries have revealed (a) a University in general excellently equipped to give graduate instruction; (b) a decline in the need for specialized Ph.D.'s; (c) a notable absence of encouragement for those students who may wish to pursue graduate work, whether interdisciplinary or not, at other than the doctoral level; (d) a similar absence of provision for mature students who may wish to return to the University at the graduate level in order to update their professional skills, to acquire new ones, or just to advance their education. That situation can in part be improved simply by modifying the regulations. This, in fact, is what we have proposed in the body of our report, and perhaps no more can practicably be suggested in the present state of the University's finances.

Nonetheless, we are not satisfied that such reforms alone can reach the root of the problem. We shall still not have provided any financial help for the categories of student mentioned under (c) and (d) above. In other words, *financially* we shall still be proceeding on the obsolescent assumption that the only graduate students worth caring for are regular doctoral candidates fresh from the baccalaureate degree. This, we submit, is flatly to ignore the realities. It is to slight the University's changing responsibility both to its own graduate community and to society at large. It is to risk the steady fossilization of our graduate system in a pattern set about one century ago.

In this Appendix we therefore outline a workable and flexible scheme that would take account of all our findings, not merely of part of them.

Recommendation

(a) *The University should establish one-year (four-quarter) graduate fellowships, to be designated as Stanford Open Fellowships.* [The precise number will depend on the amount of funding available. As a working hypothesis, we shall hereafter assume the figure of thirty Open Fellows in the initial stages of the program.]

(b) *Eligibility.* Any holder of a Bachelor's or higher degree, whether or not received from Stanford, should be eligible to apply. There should be no conditions regarding the age or sex of applicants. Between applicants of approximately equal merit, the preference should be given to residents of California.

(c) *Scope and Purpose.* The Open Fellowships are designed to enable their recipients to pursue any topic or program of studies that is deemed to be viable, and also capable of being pursued with the human and material resources available in Stanford University as a whole. As recipients we primarily envisage men and women engaged in business, the professions, or community service, who wish to solve a specific problem connected with their occupation or interests; or to work with a given expert (by his consent) in a given area; or to update their professional skill. Further categories, however, are certainly not excluded; see (b).

(d) *Administration.* Responsibility for the selection of Open Fellows and for the general implementation of the program should rest with a small committee appointed from the members of the Academic Council. There should further be an executive director of the program, reporting to the committee; he should be a tenured faculty member of broad interests, relieved temporarily from other teaching duties. The committee and director between them should have wide authority to make and remake policy (especially with regard to the proportion of students to be admitted from each category, and the areas they wish to study), keeping an eye constantly, year by year, on the changing capacity of the University community, and on the changing needs of the world outside it. Only so should we achieve a program of the required flexibility and responsiveness.

The committee and director would be responsible for the initial processing of applications, but both at that stage and at all later stages they should have the powers, and the duty, to call on the advice of any instructor in the University who is specially qualified to screen the program of study, the experience, and the capability of an applicant. They would have the further duty of appointing an adviser from the relevant area of the University's faculty to supervise each Open Fellow's work during his stay at Stanford. The adviser's chief duty would be human, educational, and for those reasons not prescribable: he would work with the Fellow on a one-to-one basis, in some cases being his main teacher, in others directing him to the other appropriate member(s) of the University community. His other duties would be to ensure that the Fellow carried out his announced program; to authorize, at his discretion, any modifications in that program that should prove desirable; to provide a final evaluation of the Fellow's work at Stanford; and to provide a summary description of that work for incorporation in the official University Diploma which would be granted to each Open Fellow on the satisfactory completion of his program.

(e) *Conditions of the Open Fellowship.* A prospective Fellow must produce a written statement showing a clearly focused topic or area on which he proposes to spend the year, and this must be approved by the Committee on Alternative Programs, the director, and such advisers as have been called in, as stated under (d). A successful applicant will have to reside at Stanford for four consecutive quarters, during each of which he should attend not less than one regular course (the number of regular courses and tutorials beyond that being left to his adviser's discretion). At the end of each quarter he should make available a written report on his activities.

(f) *Tenure, and Transfer to Doctoral Programs.* The Open Fellowships should be essentially one-year terminal appointments, not extendable or renewable under any circumstances whatever.

On the other hand, there is every reason to expect that a proportion of the Fellows might find, as they proceeded, that they were in fact qualified and willing to commit themselves to a doctoral program. Such students should be permitted to compete, by the regular procedure, for regular fellowships in the appropriate departments (usually, no doubt, the department applied to would be one in which the student had already put in considerable work during his Open Fellowship). Departments, on their side, might perhaps be willing to relax or waive their regular first-year requirements in order to admit such candidates to the second year of their doctoral program. The obvious advantage to a department would be that its instructors would already have been able to evaluate the ability of the candidate on the spot, before his admission to the doctoral program—instead of taking (as, according to statistics, most departments now do) a bet of the order 80:20 that their chosen candidate will not drop out before the end of the course.

Justification and Financing

The main criticism so far leveled against this proposal (both in the committee's discussions and elsewhere) has been that the Open Fellowships could too easily be abused; a one-year free residence on the California coast, it has been argued, might be enthusiastically sought after by persons motivated by other ideas than that of academic excellence. To this criticism there are two answers.

First, this proposal, like any educational proposal of any significance, stakes all on the quality of the individual men and women who are to execute it. One must appoint a committee with sufficient ability, openmindedness, dedication, and judgment of character; and a director who is not an administrative hack, but a practicing and committed scholar with the right imagination and enthusiasm for what is to be done. Given that kind of administration, one might well find in a few years that a Stanford Open Fellowship had become an intellectual prize to be sought after like a Harvard Fellowship or Guggenheim, bringing great prestige to the holder as well as to the University. And the effect for us would not only be prestige, but also improved efficiency. We foresee that there would result in our graduate system generally a greater flexibility and a quicker response to the intellectual needs of the outer world. We foresee two very valuable kinds of cross-fertilization: first, between department and department; second, between the somewhat closed University community and the immeasurable resources of academic skill and talent that now lie almost untapped in business and the professions.

The second answer may be more briefly stated. Only after this proposal had reached its first draft was the committee informed of the existing Professional Journalism Program (which does not appear in *Courses and Degrees*, on which our preliminary survey was necessarily based). There seems to be general agreement that this program, which offers to experienced journalists something like the facilities we propose to offer to a wider postgraduate population, has not been abused; on the contrary, it has fully succeeded in its aims.

The Professional Journalism Program is supported by outside funds. Since, for the next few years, the University is hardly likely to be in the position to find additional money of its own for an entirely new program, the Stanford Open Fellowships would have to be supported in the same way. We would urge that this possibility be seriously explored. The proposal may be considered innovative enough educationally, and likely enough to benefit both the University and the public, to justify an appeal to some outside source: either to alumni, or to one of the foundations. It is noteworthy that some of the latter, such as the Danforth Foundation, are actively engaged at this time in rethinking their strategy, and might well be attracted by a proposal of this kind.

January 21, 1972

APPENDIX IX-6

Staff Problems with Respect to Academic Coursework

Memorandum from Jean L. Finch to Committee on Alternative Programs

The role of the professional librarian in a university environment is an unusual one. At Stanford, he is classified as "staff" but his function is more than staff in some areas. He performs many duties—both known and unknown. He is not concerned alone with either acquisition or curatorial care of books, though as a librarian, of course, he fulfills both of these duties. At times he considers himself a specialist, while at other times the very nature of his service is general and he has a wide base of general knowledge. He at times fulfills the role of teacher, and there are those on the library staff who have taught various courses at Stanford. Usually, these teaching duties are confined to departments with branch libraries (e.g., Art and Architecture, and Music), although in some areas, specifically Latin American Studies and German Studies, librarians have taught courses that go far beyond library usage or bibliographical needs. Some librarians regard themselves as "hybrids."

The Librarian As Graduate Student

I am not interested here in presenting the librarian as an instructor in the University community, but in confining the role of the librarian to a specific area—that of a graduate student, specifically at Stanford. In preparing some of the questions that follow, I would like to present the feelings of colleagues in the library, who regard this role as actual or potential graduate student in a number of ways.

At the current time, there is one professional librarian working for a doctorate at Stanford and two professional librarians who have completed all course work for doctorates and are engaged in writing dissertations, but not at Stanford. Also, there are several librarians working toward Master's degrees, but not at Stanford. There are approximately ten librarians who already have the Master's in subject areas (some from Stanford), and three librarians who have doctorates in subject areas, but not from Stanford.

There are approximately twenty librarians who audit courses, mostly in language areas but sometimes in Art, Music, English, or History. These auditors, for the most part, are cataloguers who find it essential to perfect two, three, or four languages other than English.

Some librarians do not feel it necessary to seek further graduate education. They do not feel that their particular roles demand the experience of a graduate student. This was expressed by several cataloguers who wish they had closer contact with students and faculty in their cataloguing areas but do not feel it essential to pursue further study.

It would seem that those librarians who have achieved M.A.'s or Ph.D.'s in subject areas, or are currently engaged in working for advanced degrees, have strong subject motivation and work closely with departments in the University. However, it would also seem that a majority of professional librarians would like the opportunity to engage in graduate work on an interdisciplinary level, not necessarily with an advanced degree as a goal. Auditing satisfies some of these people, but others feel that auditing does not allow participation in course work and therefore does not offer much motivation. This seems to be very much an individual experience, and would require more interviews and discussion.

Of course, in reviewing the librarian as either an actual or potential graduate student, there are many ramifications. One must view his actual and future role within the library and within the University community. Does additional education benefit his performance? Is the time necessary to pursue additional studies available? What impact do these potential and actual students have on the University community? Does additional education or continuing education also benefit the University community as well as the library? These are all questions that must be considered—perhaps not at this time, but certainly during the course of study on alternative programs.

Graduate Education for the Professional Librarian: Beyond the MLS

1. The education necessary to become professional:
    a. A.B. in subject area
    b. M.L.S. in Library Science
    c. M.A. (highly recommended but not required) in subject area
2. General vs. specific:
    a. Is it relevant for the professional to specialize in a subject area?
    b. What are the subject areas possible?
    c. What type of degrees are offered in these areas?
    d. What about graduate-student-at-large status for the professional that is interdisciplinary?
    e. Should a degree be offered for this type of study? Say, an M.A. in Humanities?
    f. Is it necessary to grant degrees?
3. Is the University encouraging librarians to continue their education?
    a. Is the library encouraging librarians?
4. What percentage of the professional library staff at Stanford are pursuing, would pursue, or have pursued advanced degrees?
    a. Are professionals pursuing advanced degrees at other institutions?

5. There are professionals who audit. Should they be encouraged to take an active part in course work? Or is this confusing to the instructor and more trouble than warranted? (Mention Committee for Art and its problems.)
    a. Who audits?
    b. What courses?
6. Is there any type of financial encouragement?
    a. Any time off?
7. Should the number of professionals studying for advanced degrees or doing graduate work be limited?
8. What is the impact on the library of such a program?
    a. On the University community?
9. How many women on the professional staff are involved? 37.
    a. What percentage of the total professional staff is this? About 60 per per cent of the staff.

June 22, 1971

APPENDIX X-1

Foreign Graduate Students at Stanford

Memorandum from A. Lee Ziegler to Committee on Alternative Programs

As a private, prestige university with a long history of international involvement, Stanford has an impressive record of educating students from abroad. Foreign graduate enrollment has been particularly strong. Ninety per cent of the total foreign student population at Stanford are graduate students. (See Table 1.) Since over 20 per cent of its graduate students are from other countries (see Table 2), Stanford should give major attention to the foreign graduate student when considering future plans for graduate studies. Indeed, some departments realize up to half of their graduate enrollment from other countries.

Stanford, a private institution, need not consider priorities for enrollment from students who reside either within a particular school district or the State of California. In practice, this means that foreign student enrollment has never been based on a quota system at either the undergraduate or the graduate level, but is primarily a matter of academic qualifications and funding. During the past several years funding in general for international education has decreased dramatically, at both governmental and non-governmental levels. Part of this is a general reflection of the economic state of our nation and other parts of the world, but it also represents the decreasing priorities given to international education as compared with other domestic needs. At Stanford the financial squeeze has meant a reduction in scholarships, fellowships, and assistantships, which, in turn, has affected the amount of money available to foreign graduate students applying for financial aid. Given these increasing financial problems and a past, present, and future investment of Stanford in the education of people from other countries, I recommend that Stanford develop an explicit rationale for the education of foreign students based upon its particular interests at departmental levels, as well as broad institutional goals in international educational exchange. A careful consideration of goals may result in the University's continuing its present policy of admitting foreign students as it admits American students, for their academic excellence and ability to cover their financial needs via Stanford or other funding resources. On the other hand, the University may base its policies on other factors, such as commitment

TABLE 1

Foreign Student Enrollment by Department, Autumn 1971

Department	Under-graduates	Graduates	Total	Pct. of total foreign student enrollment
Electrical Engineering	7	157	164	13.5%
Business		135	135	11.1
Education		85	85	7.0
Industrial Engineering	5	68	73	6.0
Civil Engineering	2	69	71	5.9
Undeclared	38	7	45	3.7
Operations Research		41	41	3.4
Aeronautics & Astronautics		40	40	3.4
Mechanical Engineering	3	37	40	3.4
Economics	10	31	41	3.4
Chemical Engineering	3	33	36	3.0
Computer Science		27	27	2.2
Engineering-Economic Systems		28	28	2.3
Materials Science		26	26	2.2
Mineral Engineering		22	22	1.8
Petroleum Engineering	1	21	22	1.8
Statistics		20	20	1.7
Food Research		20	20	1.7
Applied Mechanics		17	17	1.4
Mathematics	3	13	16	1.3
Geology	1	15	16	1.3
Chemistry	4	12	16	1.3
Political Science	4	11	15	1.2
Communication	3	12	15	1.2
Applied Physics		13	13	1.1
Philosophy	3	10	13	1.1
Physics		13	13	1.1
Psychology	1	10	11	.9
Geophysics	1	8	9	.7
English	1	9	10	.8
History	1	9	10	.8
Medicine		7	7	.5
Anthropology	2	5	7	.5
Sociology	1	6	7	.5
Art	3	4	7	.5
Music	3	4	7	.5
Spanish & Portuguese	1	5	6	.4
French & Italian	1	5	6	.4
Biological Sciences	1	4	5	.4
Linguistics		6	6	.5
Graduate Special		5	5	.4
Medical Microbiology		4	4	.3
Law		4	4	.3
Genetics		3	3	.2
Hydrology		3	3	.2
Classics		3	3	.2
German Studies		3	3	.2

TABLE 1 (cont.)

Department	Under-graduates	Graduates	Total	Pct. of total foreign student enrollment
Asian Languages		2	2	.1
General Engineering	2		2	.1
Pre-Engineering	2		2	.1
Drama		2	2	.1
Biophysics		2	2	.1
Human Biology	1		1	.0
Physiology		1	1	.0
Interdepartmental	1		1	.0
Nursing	1		1	.0
Physical Therapy		1	1	.0
Neurological Sciences		1	1	.0
Physical Science		1	1	.0
Slavic		1	1	.0
Comparative Literature		1	1	.0
East Asian Studies		1	1	.0
Education-Business		1	1	.0
TOTAL	110	1,104	1,214	98.2%

to international manpower development, or a belief in the value of having foreign students as campus and community resources.

Each year more foreign students are becoming concerned about the "picture back home," and not merely the obtaining of a degree which will allow them to make a good living. More are trying to discover how they can learn things at Stanford that will enable them to meet social, physical, and technological problems when they return to their countries. They are beginning to ask themselves what kind of people they want to be and what kind of life they want to live back home, and question whether they as individuals can do anything in their society that will have future beneficial effects. The manpower needs of a particular nation and the ability of Stanford to help satisfy those needs have perhaps as much bearing on the final admissions decision as do academic preparation, language proficiency, and financial responsibility. The following are extracted from statements Ken Cooper, former director of the International Center, made after he returned from several trips to various parts of the world, meeting with Stanford alumni, and discussing their current situations vis-à-vis their Stanford experiences:

"A Middle Eastern student with considerable background in statistics finds that what he really wants to do is to work in the field of conflict-resolution and devise approaches and techniques that could prove effective with the decision-makers in his own country and with others in the Middle East. An Israeli student with an advanced degree in Engineering, rather than to proceed toward a Ph.D. focused on U.S. needs, wants to devise a degree program that will allow him to focus on particular aspects of the development problems in his country and other countries in the same region—looking toward increased interdependency and trade relations as a possible realistic approach to mutual development of Israel and its neighbors. Another student, from Peru, realizes that the brains at Stanford, and the theories, procedures, and problem-solving orientation of his Engineering training at Stanford, could possibly be applied effectively to the reconstruction of the earthquake-devastated areas in Peru, and the development of new living units more appropriate to the physical conditions of the region than the ones the local populace have used for several centuries. This particular student has successfully put together an interdisciplinary, interdepartmental team at Stanford, and with approval and support from the Peruvian government he is getting a project in the field this fall. Another student, from India, recently attended a conference on the East Coast devoted to analysis of environmental problems in Asia. He was appointed chairman of a steering committee to commence work on establishing liaison between the academic community in the United States and leaders, decision-makers, and people included in the environmental field in Asian countries.

"I mention the above to give examples of new foci developing among students themselves. Among the Stanford faculty, mostly in the professional and physical science schools, we find several new programs developing that are problem-oriented and interdisciplinary and should be of value to foreign students. Just a few are:

> The International Program in Engineering Studies, which will focus on problems of development, management, and leadership in foreign areas.
>
> Professor William Linvill's work in Appalachia and his "in the field" internships in EES (Engineering-Economic Systems).
>
> The School of Engineering's ties with the Instituto Technologico in Monterrey, Mexico, and its new integrating program in Environmental Engineering.
>
> The Program in Environmental Earth Sciences.
>
> The Human Biology Program.
>
> The Public Policy Analysis Institute.
>
> The Development Education Center.
>
> The new program this fall in Values, Technology, and Society.

"The International Center, as in the past, should and can, I think, be of considerable help to such programs.

"I believe there is a rich field at Stanford to be mined that will also involve closer collaboration between the Behavioral Sciences and the interests of foreign students, as they become more and more involved in academic programs of the type mentioned above.

"I concluded from a recent trip abroad that Stanford would do well to take a fresh look at the education we are offering to foreign students, and to give serious consideration to the three points I raised in my report:

"(1) The need in foreign countries for overall planning that will consider the society as a whole, and try to interrelate traditional values, desires, and need for development and improvement in the economic standard of life, as well as "quantity," and to think ahead to the human implications

TABLE 2
Percentage of Foreign Students in Total Graduate Enrollment by School, Autumn 1971

School	Total graduate enrollment	Foreign student enrollment	Pct. of foreign student enrollment
Business	658	135	20.5%
Earth Sciences	190	66	34.7
Education	517	85	16.4
Engineering	1,580	516	32.7
Humanities and Sciences	1,902	245	12.9
Law	481	4	.8
Medicine	450	17	3.8
Non-affiliated[a]	100	25	25.0

[a] Food Research, Graduate Special.

of the technological development being pushed so energetically at this moment in time.

"(2) Individual citizen concern for and conscious participation in the social and political change process is almost nonexistent. Several foreign alumni, who are aware of the need for the individual citizen to feel a responsibility toward his society as a whole, said they had their eyes opened to this fact as a result of seeing it in action while they were at Stanford and in the United States.

"(3) The problem-solving, experimental approach they learned in their academic work at Stanford was mentioned by a vast majority of alumni as the single most important personal product of their U.S. experience, more significant than specific courses or subject matter. Also, more important than the degree itself, was the philosophy and approach to the application of knowledge to practical problems, and was one of the big differences between study at Stanford and in their own countries."

To what degree should Stanford change or adapt its academic offerings to the emerging needs of individuals who will return to developing countries?

A specific conflict in the current academic structure vs. overseas needs can be cited as follows: the Latin American Scholarship Program of American Universities (LASPAU) identifies students from Latin American countries with a commitment to returning to these countries in teaching capacities in higher education. The intent is to upgrade the level of college and university education in these countries. Most of the Latin American institutions which sponsor students into this program need young faculty who have gone through the Master's degree—but not beyond. The Ph.D. represents training beyond the research capability of the institution, and frequently poses a threat to the other faculty members, not to mention the frustration the new Ph.D. feels if he cannot receive the salary or research facilities his educational level warrants. Therefore, Stanford from time to time receives applications from LASPAU candidates for the terminal A.M. I have been aware of such applications for Anthropology and Economics, neither of which will, under normal circumstances, accept an A.M. candidate. We therefore deny the opportunity for an educational level needed by another country by structuring a department essentially along American lines. I do not cite these specific cases to argue for or against the Master's degree in particular departments, but I offer it as an illustration of Stanford's ability or inability to meet specific manpower needs in other countries. In addition, our "Ph.D. orientation" frequently results in a capable student being encouraged into a Ph.D. program when a Master's degree may be more appropriate in meeting his country's immediate needs.

Although manpower development is a noble objective, we may have to operate more in our self-interest to justify the admission of foreign students. Many campuses and communities have found the value of the presence of foreign students as enrichment to existing curricula, particularly at the graduate level. It can be safely assumed that a seminar may be much more valuable if the input is from students with a variety of international and intercultural backgrounds. Foreign students as graduate assistants also may provide unique contributions; e.g., as language informants. The talents of these students are frequently utilized in the community in primary and secondary schools, as well as civic organizations and elsewhere, to help inform and educate various groups on their specific countries. A social studies curriculum can be greatly enlivened by the presence of a representative from the country being studied.

I hope that SGES can incorporate into their recommendations careful consideration of the needs, as well as the value, of educating foreign students, and the degree to which their admission and support should reflect Stanford's commitment to world development and Stanford's benefit from their presence.

February 23, 1972

APPENDIX X-2

Report of the Task Force on Women

Graduate education at Stanford is, by and large, a male endeavor. This is reflected in the composition of the faculty, of the graduate student body, and of the applicant pool. Over 95 per cent of the faculty on the Academic Council as of October 1971 were men; 84 per cent of the graduate students at the same time were men. Over 83 per cent of all new applicants for graduate degrees at Stanford in 1971 were men. Furthermore, there is little exposure to professional women for graduate students. Eighty per cent of all graduate students in October 1971 were registered in fields having no female faculty members. Over 84 per cent of all graduate students at that time were registered in fields having less than 15 per cent female graduate enrollment. This fact is largely attributable to Engineering, which had a graduate enrollment of 1,309 men, or 26 per cent of the total graduate enrollment in October 1971, and a faculty of 148 that included no women.

While women constitute less than 4 per cent of the graduate students in Engineering, there are other fields that remain nearly exclusively male domains. For example, women make up less than 5 per cent of the graduate student enrollment in Business. Many other departments have more than 5 per cent female graduate students, but still not a desirable balance of between 40 per cent and 60 per cent female graduate students. There are only twelve departments, accounting for 13 per cent of the graduate population, that have between 40 and 60 per cent female enrollment. (Table 1 offers detailed figures on female enrollment in the various graduate programs.)

That there are few women graduate students may be accounted for by traditional patterns of women's work and life styles. Low female enrollment figures represent low female applications, as Table 2 shows. Why women perceive graduate education as inappropriate for them relates to the fact that "the woman professional must face a conflict in the hierarchy of status priorities in Western society. For women, the obligations attached to family statuses are first in priority, while for men the role demands deriving from the occupational status ordinarily override all others."[*] This conflict

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[*] Cynthia Fuchs Epstein, *Women's Place* (Berkeley: University of California Press, 1971), p. 8.

TABLE 1

Women Graduate Students by Doctoral Program, Autumn 1971

(*Per cent*)

Program	Pct. women
Group I: Less than 40% Women	
Applied Mechanics	0.0%
Biophysics	0.0
Engineering Science	0.0
General Engineering	0.0
Hydrology	0.0
Physical Sciences	0.0
Aeronautics and Astronautics	1.6
Industrial Engineering	1.7
Applied Physics	1.9
Electrical Engineering	2.0
Geophysics	3.0
Mineral Engineering	3.0
Civil Engineering	4.0
Business	4.1
Physics	4.4
Chemical Engineering	5.5
Engineering-Economic Systems	5.7
Petroleum Engineering	7.4
Materials Science	9.6
Biochemistry	9.9
Chemistry	10.0
Geology	10.0
Economics	10.8%
Medicine (M.D.)	11.5
Operations Research	11.6
Mathematics	11.8
Computer Science	12.2
Law	16.4
Chinese	16.6
Political Science	18.3
Philosophy	20.0
Sociology	25.0
Psychology	27.9
Neurological Sciences	28.6
Pharmacology	30.0
Statistics	30.0
History	30.3
Drama	31.8
Genetics	33.3
Communication	34.3
Classics	35.3
Biological Sciences	37.7
Food Research	38.0
East Asian and Regional Studies	38.4
English	38.6
Group II: 40–60% Women	
Physiology	40.0
Speech and Hearing	40.0
Education	40.2
Medical Microbiology	42.9
Anthropology	43.7
Architecture and Urban Design	44.4
Latin American Studies	46.0
Art	48.2
Anatomy	50.0
Music	51.8
Spanish and Portuguese	59.1
Japanese	60.0
Group III: More than 60% Women	
Slavic	61.5
Physical Therapy	70.0
Linguistics	70.6
Comparative Literature	71.4
German Studies	72.7
French and Italian	80.0

arises because the institutions which employ and utilize professionals are predominantly male, and do not reflect in their make-up structures which reduce this role strain.

A study of women undergraduates at Stanford conducted by Marjorie

TABLE 2

Applications, Admissions, and Matriculations by School and Sex, Autumn 1971

School	Applications			Admission rate (admit/apply)		Matriculation rate (matric./admit)	
	No. men	No. women	Pct. women	Pct. men	Pct. women	Pct. men	Pct. women
Professional Schools:							
Business:							
M.B.A.	2,348	97	3.9%	21.3%	27.8%	54.2%	77.7%
Ph.D.	312	14	4.3	10.5	7.1	69.6	100.0
Earth Sciences:							
Ph.D.	211	14	6.2	60.1	78.5	37.0	18.1
Education:							
A.M. & Ph.D.	437	273	38.4	40.5	42.8	55.3	50.4
Engineering:							
Ph.D.	1,848	43	2.3	65.3	83.7	37.1	58.3
Food Research:							
Ph.D.	36	5	12.2	22.2	80.0	62.5	75.0
Graduate Special:							
Ph.D.	26	20	43.5	84.6	95.1	81.8	94.7
Law:							
J.D.	3,302	554	14.4	9.9	12.9	41.8	30.5
Medicine:							
M.D.	2,653	374	12.4	4.2	7.7	50.8	58.6
Other	148	97	39.6	13.5	34.0	55.0	60.6
Humanities and Sciences:							
Physical Sciences	1,195	212	15.1	27.1	24.5	35.9	44.2
Social Sciences	1,204	531	30.6	14.9	13.3	43.8	47.8
Humanities	1,238	830	40.1	14.3	19.5	58.9	56.7

SOURCE: Graduate Admissions Office.

Lozeff of the Stanford Institute for the Study of Human Problems suggests that Stanford women consider their responsibilities as wives and mothers to be more important than their career goals. In light of the fact that 45 per cent of all women are employed full time, this is a somewhat unrealistic expectation. Although this study is not charged with making recommendations which extend beyond the purview of graduate education, it is clear that changing the definition of what is expected behavior for women will ultimately change these unrealistic expectations. Part of changing this definition of what is expected for women involves changing both the nature of graduate education from a predominantly male environment to a male *and* female environment, and changing those institutional structures which tend to prevent women from participating in both family and career roles.

Evidence that changing certain structures in the University might increase the number of women in graduate school is provided by a study of women college graduates conducted by the Department of Health, Education, and Welfare in the years 1960–64.[*] This study, which traced women's occupational patterns following graduation from college found that a high per cent of the women considered a number of structural features essential for graduate school attendance. Thus, 57 per cent of the women reported that the availability of excellent child care facilities was an essential component of their decision to go to graduate school; 52 per cent reported that part-time matriculation was essential; 43 per cent reported that the availability of evening courses was essential. In contrast, only 20 per cent reported that a stipend covering all school expenses was essential. Thus, while not specifically relating to academic work, the apparently peripheral concerns of child care, part-time study, and housing are included in our report out of a recognition that such structural concerns are vital to a target population of potential female graduate students.

MAJOR RECOMMENDATIONS

Recruitment of Students

The low representation of women in many graduate programs can be significantly improved by active recruitment of women. For example, in one year (1971–72), female applications in Medicine rose from 12 per cent of the first-year applications to 18 per cent of the first-year applications. This increase may be directly attributable to active recruitment on the part of the School of Medicine, which received national press for its efforts. Efforts were made to define medicine as an appropriate field for women, in an attempt to break traditional patterns of expectation.

Recommendation 1: Steps shall be taken both by the University and by departments having fewer than 40 per cent women to increase applications from women. Such steps include:

(a) Advertising in professional journals that the department is attempting to increase female enrollment and will welcome applications from qualified women.

(b) Writing press releases indicating that there is an attempt being made to increase female enrollment.

(c) Enclosing policy statements with application literature to the effect that the department welcomes applications from qualified women.

(d) Eliminating exclusively male phrasing in department literature. The Committee on the Education and Employment of Women could help a department identify such phrasing.

(e) Assuring women that the department will assist them in finding jobs after graduation.

(f) In departments having fewer than 25 per cent female applicants, making special recruitment efforts through the Graduate Division Office.

Job Placement

There is little concrete evidence about the placement of women after they complete their Stanford education. If, however, the evidence of placement of women in the academic hierarchy at Stanford may be used as an indicator of national statistics, the figures cited in the Report on Academic Employment of Women at Stanford may justify the often heard complaint among female doctoral candidates that they face discrimination. According to this report, 53 per cent of all male Academic Council members are full professors, in contrast to only 19 per cent of female Academic Council members; 20 per cent of the men are associate professors, in contrast to 32 per cent of the women; and only 27 per cent of the men are assistant professors, in contrast to nearly half of the women, or 49 per cent. Female graduate students express concern that their placement be considered as important as the placement of their male peers.

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[*] *Special Report on Women and Graduate Study,* U.S. Dept. of Health, Education, and Welfare, NIH Report No. 3 (June 1968).

Recommendation 2: Steps shall be taken in all departments to provide special assistance to female graduate students in finding jobs after graduation. Such steps include:

(a) Providing lists of all students who are seeking jobs to all members of the department.

(b) Pooling and making public information about available jobs, so that all students have access to this information and can initiate their own applications.

(c) Making placement of graduates a departmental concern, rather than leaving it up to the individual professor, in order to ensure consideration for all qualified candidates.

(d) Checking with women before making assumptions about availability or non-mobility.

Composition of the Faculty

As early as 1958 a committee of women faculty members in writing about "The Motivation and Education of Stanford Women Students" identified the relevance of female role models in motivating women to achieve. In her report for SES, Alberta Siegel stressed the importance of having women serve as relevant role models for undergraduates, and recommended that the number of women on the faculty be increased to serve this end. In 1967, women constituted 5 per cent of the faculty on the Academic Council; Siegel made her recommendation in 1969. Yet, still, women constitute only about 5 per cent of the faculty on the Academic Council, while many women with Master's degrees fill secretarial positions. Table 3 shows the comparative figures for faculty in 1967 and 1971.

As a university, Stanford is dedicated to providing quality resources for its students, enabling them to make major contributions to their fields of knowledge. Greater numbers of women faculty would be more responsive to the interests of students, guiding and directing research and teaching courses in the new field of Women's Studies. This should not be construed in a narrow sense, but rather in the broad sense of providing resources for students of both sexes interested in expanding the focus of graduate education to include new perspectives on the traditional subject areas.

Recommendation 3: Steps shall be taken that will bring female representation on the faculty to between 40 and 60 per cent of the faculty. Such steps include:

(a) Initially hiring women faculty by department to achieve female

TABLE 3

Faculty at Each Rank by Sex, 1967 and 1971

(*Per cent*)

Rank	1967 Men ($N=994$)	 Women ($N=49$)	1971 Men ($N=988$)	 Women ($N=47$)
Professor	98.4%	1.6%	98%	2%
Associate Professor	95.5	4.5	93	7
Assistant Professor	90.3	9.7	92	8

NOTE: The 1967 figures are from Alberta Siegel's SES study. The 1971 figures were compiled by Anne Miner.

representation in proportion to the number of Ph.D.s produced annually in that field at the top ten universities in the United States.

(b) Implementing the recommendations in the November 1971 Report to President Lyman on Academic Affirmative Action for Women.

(c) Public advertisement of all available positions, with applicants free to submit their own names.

(d) Listing of positions in professional journals.

(e) Having at least two women on all faculty search committees. One woman is insufficient, since she will be in such a minority as to probably have little impact on decision-making.

Departments without sufficient women faculty for search committees should recruit faculty women from related departments or should place women students on the committees.

Academic women frequently fill the ranks of Research Associates and non-professional faculty and are hence qualified but unnoticed for professional positions. Women on search committees need help in identifying the professional women who would be qualified for faculty positions in the various fields. This sort of directory might include information from AAUP, recent lists of graduates from various fields, etc. The University could approach HEW for assistance in this endeavor.

Implementation

For the previous recommendations to be implemented effectively, a person is needed to coordinate recommendations, to work with all departments, and to make further studies of the problems women face in coming to graduate school. In addition, this person would coordinate the implementation of the structural recommendations we make below.

Recommendation 4: A woman professor should be appointed as half-time Associate Provost or Associate Dean to supervise the implementation of the previous recommendations and to carry out further investigations of and solutions to problems of women graduate students. This Associate Provost or Associate Dean should work with the Faculty Affirmative Action

Officer to implement recommendations related to faculty hiring, as well as with the Dean of Graduate Studies to implement recommendations related to graduate admissions and study. This Associate Provost or Associate Dean should have appropriate clerical and research staff.

A partial list of the duties of this Associate Provost or Associate Dean includes the following:

(a) working with the Faculty Affirmative Action Officer and the Dean of Graduate Studies in developing a working policy toward balanced graduate enrollment by sex. Specifically, if a graduate program has less than 25 per cent of either sex, this person would establish goals and timetables for recruiting and balancing enrollment.

(b) for Schools and departments having less than 25 per cent of one sex, this person would: provide advice and support for recruiting efforts; suggest how to advertise positively for men and women; aid with any special publications; coordinate pre-professional counseling for Stanford undergraduates; work with the University Committee on the Status of Women on their efforts to do the above.

(c) in the fields where one sex is a *de facto* minority, monitor applications upon applicant request as with the ethnic minorities. This includes: reviewing individual applications; consulting with departments; reviewing aid problems on individual applications; monitoring to make sure financial aid is equitable by sex.

(d) develop a system for monitoring financial aid by sex to make certain that basic equity exists or continues.

(e) because service and support questions are particularly important to female graduate students: change Escondido Village Housing Regulation I.A.3, which states that eligibility is based on both husband and wife occupying the unit; review housing publication materials to make sure women understand options for them in University housing; provide child-care options list to all University counseling services that serve graduate students; work with concerned University officers on questions of child-care availability.

(f) as part of the role model project for all female students, work with Faculty Affirmative Action Officer to generate programs on a University-wide basis for encouraging departments with no regular female faculty to recruit, and identify potential female "other teaching" candidates (visiting professors, lecturers, instructors).

(g) work with Committee on the Status of Women and the Undergraduate Studies Office on pre-professional advising of Stanford undergraduate women, particularly in Engineering, Medicine, Law, Earth Sciences, and other fields having low female graduate enrollments.

(h) where appropriate, publicize the University's interest in women graduate students external to the University; for example, publicize the interest in recruiting women Engineering students in high schools.

(i) keep current lists of courses relevant to the study of women.

(j) coordinate the assessment and study of factors contributing to low female enrollments in graduate school.

STRUCTURAL CONSIDERATIONS

Academic Rules and Policies that Contribute to Low Enrollments of Women

1. *Part-time study:* In light of the earlier findings of the HEW report, this report considers that the relationship between part-time study and female graduate enrollment may be considerable. This report has included a comprehensive treatment of the issues involved in part-time study, and includes this recommendation in this section out of a recognition that part-time study is particularly salient to graduate women.

Recommendation 5: Graduate students should be allowed to enroll for reduced loads, with financial aid given commensurate with their load and their ability and need.

2. *Age:* Although women may be marrying later and deferring children, there are still numerous women who have finished their child-rearing by their early thirties and who wish to return to school to embark upon a second career. Unwritten policies against admitting the mature student operate harshly against women. Applicants should be evaluated on their ability and potential, not on their age.

Recommendation 6: Information about a student's age should not be included on application forms unless the applicant wishes it to be.

3. *Non-matriculated students and transfers:* One problem encountered by women graduate students is that they frequently follow their husbands to new jobs. Attributing high rates of attrition to women in graduate school does not take this fact into consideration. Yet, many students do not know that they may transfer, or that they may enroll at Stanford as a non-matriculated student and have their units transferred to their former university.

Recommendation 7: The Dean of Graduate Studies should publicize alternative methods of graduate school attendance to spouses of enrolled graduate students. This includes both the possibility of transfer and of having units taken at Stanford transferred to the former university.

Service Policies Affecting Graduate Women

1. Child care: This issue of child care provided by the University is a complicated one. It is clear, however, that for women *especially*, conflicts between parental obligations and study requirements contribute to lower rates of women in graduate school. Some 27 per cent of male graduate students have children, while only 12 per cent of the female graduate students do. We suggest, although we have only the cross-national data of the HEW study as support, that were child care inexpensively available near or on campus, more women would attend graduate school. How this child care should be organized or administered is a question which extends beyond the scope of this study. We include the point because it is an issue of great concern to women graduate students, as well as faculty and staff. A study of child care, its costs and manifestations, is now being conducted by Dr. Aimee Leifer for the University. We look forward to the recommendations of that study.

2. Housing: One-parent student families have an even greater need for inexpensive on-campus housing than two-parent families. Such families are sometimes permitted to live in Escondido Village now, but statements in Escondido Village literature may discourage some very capable students from coming to Stanford.

Recommendation 8: Women and men with families should be encouraged to live in Escondido Village Housing whether or not they have spouses living with them. This recommendation should be implemented by:

(a) Eliminating regulation I.A.3 of the Escondido Village Housing Married Student Regulations, which states, "Eligibility is contingent upon both the husband and wife occupying the unit."

(b) Eliminating the statements in the first paragraph of the letter which Escondido Village mails to anyone who inquires about married student or family housing which states, "Eligibility is contingent upon both the husband and the wife occupying the apartment."

February 15, 1972

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APPENDIX X-3

Report of the Task Force on Postdoctoral Research Associates

There are approximately 250 men and women who hold formal appointments as Research Associates in Stanford University outside the School of Medicine, plus about another hundred Research Associates in Medicine. The majority of these appointments are in the Science and Engineering departments and SLAC. A more complete census including all postdoctoral fellows, faculty visitors at Stanford on sabbatical, and other types of visiting researchers would produce a substantially larger number.

This pool of highly educated men and women represents a resource that could be drawn upon more extensively and effectively than at present, to serve various academic purposes within the University. Postdoctoral researchers contribute heavily to the research function of the University. They also contribute, more heavily than is generally realized, to the graduate teaching function through day-to-day interaction with Ph.D. students and through the maintenance of group research efforts. But many Research Associates would welcome broadened opportunities to participate, and both they and the University could benefit greatly from their participation in such activities as:

(1) Formal teaching of regular University classes (as temporary substitutes or regular instructors).

(2) Teaching more specialized or informal classes and seminars, particularly in their special fields of expertise.

(3) Supervision of Honors Programs, undergraduate theses, and individual study projects.

(4) Supervision of other special and informal undergraduate courses such as SWOPSI courses, freshman seminars, and the like.

(5) Affiliations with student living groups on a live-in, dine-in, or other regular basis.

Increased academic participation by postdoctoral researchers should not be viewed, however, as a benefit that can be obtained totally free of cost. Research Associates in particular are supported largely by the research grants of the groups with which they work. To the extent that a postdoctoral researcher is supported by research contract or grant funds, University funds would have to pay for any redirection of his efforts to academic activities such as classroom teaching. Moreover, beyond this, concern must be shown for fulfilling the obligations undertaken by the research contract. Thus any involvements of Research Associates in academic activities would require that prior arrangements are worked out with the research advisers in order to assure that needed and proper commitments to the research program are filled.

Because of the widely varying activities and widely varying distribution of postdoctoral researchers in different disciplines across the University, our recommendations to increase the involvement of postdoctoral researchers in other aspects of academic life are necessarily rather general and unspecific:

(1) To the extent that individual researchers may wish to seek out more extensive academic involvement, either on "working time" or as an extramural activity, such initiatives should be encouraged.

(2) We strongly encourage individual faculty and individual departments to examine the roles that Research Associates and other postdoctoral researchers at present play in their activities, and to consider ways in which these personnel might be more effectively integrated into their total academic program.

(3) We particularly urge departments not now having Honors Programs or undergraduate theses to consider the possibility of implementing such programs with the assistance of postdoctoral researchers for supervising individual student projects.

(4) We urge individual departments to transmit to the University, and the University to publish regularly in one of its newsletters or bulletins, short notices of the arrival or new appointment of Research Associates and other postdoctoral visitors, their fields of interest, period of stay, and campus location.

One possible further step by the University could be to establish a continuing central registry of all visitors and non-faculty postdoctoral people on campus, to serve as a data base for further studies and to make the existence and the special talents of these people more widely known. The periodic announcements of new appointments and visitors recommended above would provide an economical method for accumulating the same information over a period of time.

The issues related to an expanded role of postdoctoral Research Associates in the University were not central for SGES, and we have not probed deeply into this question. Clearly these important issues should be studied further.

March 31, 1972

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Sidney D. Drell
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David W. G. S. Leith
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APPENDIX X-4

Report of the Task Force on Student Participation in Decision-Making

We believe that Stanford University should adopt, as a statement of policy, the proposition that

> *graduate students should be involved in decisions pertaining to the conditions of their education that are made by departments and Schools to which they belong.*

This recommendation is based on three conclusions our Task Force has drawn concerning the degree to which graduate students are currently involved in the governance of their departments and Schools.

1. Although formal involvement across the University is generally high, it is not uniformly high; graduate student needs and desires are not adequately considered within at least some departments.

2. Where graduate students are involved in departmental decisions, this involvement is frequently haphazard and less regular than the department's "organization chart" would suggest; faculty "call the shots" by determining when students shall be consulted.

3. Where student involvement is low or nonexistent formally, involvement is likely to occur more "informally" during crisis situations or by "playing politics."

It appears to us that student participation in departmental governance is on the increase. This opinion is based upon impressions derived from conversations with some faculty and students across the campus, and upon a comparison of results from a survey of departmental Chairmen recently conducted by the Task Force with the results of a similar survey conducted two years ago for the Dean of Graduate Studies. The results of our recent survey point out the unevenness in the pattern of student participation. Out of 57 questionnaires sent to departments and Schools with graduate programs, 42 were returned in completed form. In 28 departments, students sat regularly on some committees. In four additional departments there were no committees, but students were consulted informally. One professional School had no formal representation of students on their committees; another had students sitting on almost all of them. Several departments are actively opposed to even the most minimal student participation. One, Biological Sciences, reported that graduate student representatives sat on all departmental committees, that even undergraduate representatives sat on most, and that graduate students were voting members of their Graduate Studies, Departmental Policy, and Search Committees. This department claims that students have "taken on a good deal of the labor, and have performed magnificently in every respect."

University-wide, however, our impressions are that there are still a number of factors which work against student participation. Students often fear the vindictiveness of faculty against the "pushy" student. A few faculty seem to fear that formal student representation will lead to students "taking over" programs, causing the lowering of standards and the violation of the sanctity of certain unspecified faculty prerogatives. We suspect that in many cases, extremely important issues—and therefore opportunities for the most interesting kinds of involvement—are too few and far between to support sustained interest in student participation on the part of faculty or students.

Although we feel that the most effective student participation would occur if internal departmental structures were standardized campus-wide and there existed a regularized procedure for increasing student participation, we realize that departments do vary greatly in their organization and that this situation, which is likely to remain, must be taken into account. In light of this, we recommend that

> *the University should request each department to establish procedures consistent with University policy which regularize student participation in decisions pertaining to graduate programs and which fit the needs of that department.*

We suggest that admissions, requirements, and selection of faculty be included at a minimum, as areas pertaining to graduate programs. We offer the following comments in clarification of this recommendation.

First, we suggest that each department large enough to warrant such a structure establish specific standing committees to decide issues of policy within the department. Most departments already use committees for decision-making and our survey indicates that this process is the most practical and effective way to "plug in" students. We believe that students should be put on committees with full membership status. Inasmuch as Stanford graduate students are generally responsible and mature men and women, it should be recognized that they, like members of the faculty, can respect the need for diligence and propriety when dealing with sensitive and confidential information. Our concern, however, is with participation in decisions, not only with participation on committees. We recognize that discussion, debate, and the formation of consensus are all likely to occur through informal interactions as well as in formal committee meetings. Our intent is that students be involved in all activities that are part of departmental decision-making processes.

Second, some professors and students have evidenced confusion about whether students can legitimately serve on departmental committees with full membership status. We have received clarification of this question from H. Donald Winbigler, the Academic Secretary. Mr. Winbigler informs us that the only University constraint against complete student involvement is that the Articles of the Academic Council (last revised in September 1971) state that only members of the Academic Council may vote upon matters before the Council. Thus matters forwarded to the Council by individual departments can only represent the votes of Academic Council members. Nonetheless, there are no restrictions upon the students' ability to sit on departmental committees to participate in the discussion of those matters which go directly from an individual committee to the Council, or to have voting status on those committees which only make reports or recommendations to the faculty within a department.

Third, within each department there should exist some formal kind of student organization to represent the interests of students. One alternative, particularly for those departments that are so small that a formal student organization would not be appropriate, could be some class or student representative who has the responsibility of serving as a constant liaison person between faculty and the students. We believe that the most effective faculty-student interaction occurs in departments and Schools when there is an established student organization which serves to inject student opinion into discussions within individual departments.

Although it is essential that students be represented in the formulation of decisions which pertain to graduate education in departments or Schools, we recognize that many decisions which affect students in graduate programs are made at a broader University level. Consider, for example, that policies on student loans are made in the Financial Aids Office, that policies on new programs, degrees, or courses are generally formulated by the Committee on Graduate Studies, and that policies on graduate housing are made in the Dean's office. Although students are at times involved in committees working on these kinds of issues, this is not always the case, and when it does exist it appears to us often to be ad hoc. Further, many of these decisions appear to us to be made not by committees, but by University administrators. We recommend, therefore, that

> *graduate students should be involved more systematically and formally at the University level at those points where policy relating to graduate students is set and implemented.*

In conclusion, let us clarify our recommendations. For the most part, the extent of student involvement is an aspect of departmental governance that cannot be legislated externally. We have recommended that the faculty, through action in the Senate, clarify University policies on student involvement in departmental affairs so that individual departments have a clear standard with which to gauge the adequacy of their own practices. We have also recommended that the University take additional steps to involve students in a formal sense wherever possible in those decisions made outside departments affecting graduate programs within departments. We believe that faculty are often consulted formally or informally in such matters and are asking only that the same policy be regularly extended to students. Our recommendations relating specifically to departments, we realize, must be acted upon individually by departments, and we have no across-the-board recommendation except that minimum standards ought to be established. We have suggested several such standards for consideration by the University community.

We realize that there are certain philosophical issues underlying the problem of student participation in University governance, and certain well-established traditions. We have not sought to deal with these. Rather, our recommendations are predicated on the fact that deep involvement of graduate students in departmental governance has been tried in many departments, and it has succeeded. Where such involvement exists it is our impression that faculty-student relations are better, and much less explosive, and that policies on graduate education are better informed and more responsive to student needs. Further, student participation in departmental governance is on the increase in most areas of the University. Our aim is to speed the process and increase the legitimacy attached to it.

March 10, 1972

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